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THE LANCET.

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The Lumleian Lectures
ON
NUTRITION AND MALNUTRITION.

Delivered before the Royal College of Physicians of London on March 28th and 30th and April 4th, 1905,

BY W. H. ALLCHIN, M.D. LOND., F.R.S. EDIN.,
FELLOW AND CENSOR OF THE COLLEGE; SENIOR PHYSICIAN TO THE WESTMINSTER HOSPITAL.

LECTURE I.

Delivered on March 28th.

MR. PRESIDENT, FELLOWS OF THE COLLEGE, AND GENTLEMEN,—I desire at once to express to you, Sir, and to my late colleagues on the Censors' board my high appreciation of the honour done me in being selected to hold the Lumleian lectureship this year. For indeed it is an honour to take a place on the roll of lecturers who since the year 1581 have addressed the College and amongst whom is included the illustrious Harvey who in his Lumleian lectures commencing in 1616 expounded his views on the circulation of the blood. The recollection of this circumstance and of the many great physicians who in more recent times have alike instructed and charmed their hearers from the place which I for the moment occupy, whilst it may stimulate your lecturer to his best endeavours, none the less fills him with fear at the responsibility of his task and furnishes him with a claim for your forbearance and generous consideration. For these in fullest meed do I entreat at your hands.

DEFINITION OF NORMAL NUTRITION.

It will be obvious that for a satisfactory treatment of the subject upon which I propose to address you it will be desirable and even necessary that I should commence by considering what it is we understand by the term "nutrition" as a normal process or rather combination of processes. And this is the more incumbent on me since a large amount of work of an experimental character has been carried out by numerous observers in various parts of the world which has contributed to establish a certain accuracy in our conceptions on what is admittedly one of the most difficult problems for investigation and at the same time has suggested further hypotheses that still await verification. Clearly no useful notion can be entertained of what is to be understood by "malnutrition" until some agreement is arrived at as to what is implied by the normal process, though it may well be that many of the facts observed in those experiments which disease offers may, and undoubtedly do, contribute to the elucidation of the healthy living.

Among the various data which form the basis of biology, whether the study be that of animals or plants, of health or of disease, is the recognition of the fact that the manifestations of life are found to be invariably associated with the presence of a certain peculiar material of variable and highly complex constitution denominated protoplasm, or, better, bioplasm, with the further postulate that every vital process is the outcome of the reaction between this material and its environment; every phenomenon which the living organism presents, be it chemical or physical or of that more peculiar character which we speak of as vital, is the expression of the conversion of potential energy into kinetic energy or the reverse. Numerous and varied as these manifestations are in beings so highly organised as ourselves they are all to be seen in their simplest form in the unicellular organisms that maintain an independent existence and may all be regarded as the outcome of those material interchanges between the constituents of the bioplasm among themselves and with the food-stuffs which are brought into relation with it from outside, whereby the integrity of the living matter is upheld and its continued activity rendered possible. To the processes by which the bioplasm assimilates or makes use of this outside material the term "nutrition" is applied and underlying, as it does, the characteristic activities of living matter nutrition may in its widest sense be regarded as synonymous with life itself. It is, however, in a somewhat more restricted sense that I am now employing it—viz., to designate those preparatory changes which the ingesta undergo to fit them for incorporation in the protoplasmic molecule and their ultimate fate therein. The subject, it will be at once seen, deals with certain compositions and decompositions of matter, the formation of more and more complex compounds with their subsequent splitting up into simpler substances. As such it comes within that province of knowledge which we term chemistry, but concerned, as it is, with that form of matter recognised as living the problems presented are those of bio-chemistry, a sub-division of the parent science which is daily coming to occupy a more and more definite and assured position.

Clearly, then, there are two factors to be considered at the outset, the bioplasm on the one hand and on the other the food or nutriment, for I leave out of account for the present those portions of the ingesta which are incapable of being made use of by the bioplasm and which are therefore innutritious.

THE BIOPLASM, ITS STRUCTURE AND COMPOSITION.

And first as to the bioplasm itself. That this substance, even in the simplest form of it with which we are acquainted, exhibits some degree of structure, some difference in appearance and consistency in different parts, is now all but universally recognised; the view that it is essentially homogeneous in character and that such structural features as it exhibits are the result of post-mortem changes or are actually artifacts is no longer tenable. Of the nature, however, of its structure no little difference of opinion prevails, but as it is in a minor degree that I am now concerned with this aspect of the question it will suffice to say that apart from the obvious separation into cell contents and nucleus which are to be met with in all cells a third structural element known as the central corpuscle or centrosome is to be generally detected. Each of these several constituents of the cell is to be distinguished by easily recognisable differences in the arrangement and appearance of the material of which they are made up. Further, the protoplasm of which the nucleus and mass of the cell are composed exhibits a general appearance of being formed of a more or less distinct reticulum—spongioplasm—the meshes of which are occupied by a semi-fluid substance—hyaloplasm. A similar arrangement obtains in the nucleus, the fibrillar network owing to its behaviour with certain staining reagents being known as the chromatic substance, the clear substance or matrix being termed achromatic. Considerable variations are met with in different cells and even in the same cell at different times, marked peculiarities in the disposition of the nuclear fibres appearing previously to the division of the nucleus—mitosis. Doubts have existed as to whether both the network and the hyaloplasm of the cell are living or whether the reticulum alone can be so described. The most recent view, however, of the structure of the protoplasm which shows it to have a "foam-structure," depending "upon the presence within a uniform ground-mass of a large number of extremely fine vacuoles, lying almost at the limits of microscopic visibility and so close together that their walls consist of relatively thin lamellæ,"[1] would seem to suggest that the entire protoplasm is to be looked upon as living matter.

For my present purpose I am more concerned with the chemical composition of the living matter and unfortunately our knowledge of this is much less even than it is of its structural characters. I need not remind you of the fundamental difficulty that meets the investigator—viz., that the very means that are employed for pursuing the inquiry cause the death of the material and consequent elusion of the problem. This much, however, may be affirmed, that invariably there is to be obtained from the bioplasm a certain amount—perhaps as much as 60 per cent.—of those extremely complex bodies termed proteids composed of the five elements: carbon, hydrogen, oxygen, nitrogen, and sulphur, all of them of low atomic weight but combined to form molecules of great size owing to the very large number of atoms of which they consist. Associated with these nitrogenous constituents of the protoplasm there are to be found with varying frequency particles of carbohydrates, of fats, together with inorganic salts and water, as well as such substances as urea and purin bodies (xanthin, hypoxanthin, guanin, &c.). Whilst without doubt the proteid constituents are the most important as they are the most abundant, forming in muscle about from 20 per cent. to 25 per cent. solid

[1] General Physiology by Max Verworn, translated by Dr. F. S. Lee, 1899, p. 87.

matter of that tissue, it is by no means probable that it is as proteids as we know them that they exist in the bioplasm and it may be taken as certain that no one form of matter is solely capable of manifesting life, rather is it the outcome of interactions among many diverse bodies. This renders it most likely that the other substances mentioned—viz., fats, carbohydrates, and salts—are in varying degree essential components of the living matter, whether they are about to be used by the nitrogenous constituents or are the products of decomposition of those nitrogenous constituents such as urea and the purin bodies undoubtedly are. Moreover, it must be remembered that protoplasm is far from being of a uniform composition. We are perhaps a little too apt in our recognition of the universality of this physical basis of life to assume that it is of constant character, if, indeed, its actual composition is ever considered. The difficulties surrounding the investigation of its chemical structure are such as to offer a barrier to further inquiry and we have become so satisfied with the word protoplasm as all sufficient that we go no further and fail to realise that we are really only on the threshold of the problem. But although we are profoundly ignorant of its chemical constitution we may nevertheless affirm with certainty that protoplasm does differ in this respect, subtle as those differences may be. The protoplasm of the plant is not identical with that of the animal, nor that of the nerve cell with that of the muscle fibre, and it may well be that some differences are required in the nature of the pabulum necessary for its restitution, or in any case that the intimate character of the requisite synthetic changes is of a variable range. The nutritive needs, that is to say, of all living matter are not exactly the same.

It will be desirable to consider these several varieties of substances a little more in detail, and first the *Proteids*. These bodies, which are met with in both animal and vegetable tissues, conveniently fall into two groups which may be termed (*a*) the free proteids and (*b*) the combined proteids. The former includes the albumins and globulins, coagulated albumins and the results of the proteolysis of these bodies—viz., albumoses and peptones. They differ, no doubt, in their actual chemical composition but are ordinarily distinguished from each other by differences in their solubility in water or in saline solutions, in the temperature at which they coagulate, &c. The combined proteids are compounds of the simple or free proteids with other bodies, from which they may often be separated by strong acids. The chief substances of this class are hæmoglobin, which is an albuminous compound with a complex iron-containing body; glyco-proteids, which are compounds of proteids with carbohydrates; and nucleo-proteids or compounds of proteids and nucleic acid, which latter is an organic compound of phosphoric acid. It is evident that the combined proteids are more complex in their constitution than the simpler proteids; they contain more atoms with consequent increase in size of the molecule and some of them contain another element than the carbon, oxygen, hydrogen, nitrogen, and sulphur, of which all proteids are formed, such as iron or phosphorus. Intimately associated with all proteids are various inorganic salts which form the ash when these substances are incinerated. Though by no means to be regarded as living matter, it is likely that the combined proteids are more closely connected with the bioplasm than are the simpler bodies and it is certain that the nucleo-proteids are specially concentrated in the nuclei of the cells which are probably the most important portion of the living unit, whilst the bulk of the cytoplasm is made up of the simpler proteids, chiefly globulins.

Nothing definite is known concerning the actual constitution of the proteid molecule as it may be represented by a rational formula—even the empirical formula is for the most part very uncertain. Some attempts at synthesis have been made but as yet with only partial success and such views as provisionally obtain as to the intimate nature of the molecular constitution are derived from a consideration of the products of their decomposition. From many of the proteids, though by no means from all, by suitable treatment a carbohydrate may be split off, which, wherever its exact nature has been determined, has proved to be a compound of sugar with ammonia, leaving a moiety which contains the bulk of the nitrogen. This is the basis on which has been founded what is known as the glucoside theory of proteid constitution which is clearly applicable to only some of the proteid bodies.

By another method of treatment—viz., by hydration, as effected by heat and mineral acids, or in a measure by the digestive ferments of the alimentary canal—the proteids are split up into amido-fatty acids, such as leucine, tyrosine, &c., and basic bodies, such as lysine and arginine, from the latter of which urea can be obtained. The combinations of these amido-acids, synthesised by Emil Fischer and named by him "polypeptids," throw more light on the constitution of the greater part of the proteid molecule than any other suggestion hitherto put forward. Among the most constant decomposition products of proteids to be found in the tissues and commonly referred to as nitrogenous extractives are urea, purin or alloxuric bodies, such as xanthine, hypoxanthine and uric acid, creatine, and creatinine. Others are met with in but very small quantities.

Of the living matter, at least in the highest forms of life, we have most knowledge of the composition of muscle and nerve, and it is impossible to avoid in reference to this subject mentioning the name of our distinguished Fellow, Professor W. D. Halliburton, whose work in this direction is of the highest order and forms the basis of our information.

The close similarity in behaviour of the juice that may be expressed from fresh muscle—muscle plasma—to that exhibited by blood plasma is generally recognised. In both cases under favourable circumstances coagulation takes place due to the formation of myosin and fibrin respectively, the precursors of these substances in the two plasmas being known as myosinogen and fibrinogen. The cause of the coagulation is assumed in each case to be a ferment. Each clot as it contracts squeezes out a fluid from its meshes—muscle serum and blood serum. After death the muscle plasma normally clots to a greater or less extent and causes the stiffening termed rigor mortis and it may be further observed that the muscle in its coagulation becomes acid, from the formation of sarcolactic acid, in place of the alkaline reaction that it exhibits when alive. Cold and the addition of neutral salts in both cases delays coagulation for the due occurrence of which in blood the presence of calcium chloride is essential, as there is some reason to believe is also the case with muscle. Further examination of the myosinogen, which practically forms (with the exception of a small quantity of nucleo-proteid probably derived from the sarcolemma and from the nuclei of plain muscle plasma in which it is most abundant) the whole of the voluntary muscle fibre, shows that in its natural state it consists of two proteid bodies which coagulate at different temperatures and are precipitated by different amounts of neutral salines; for the more abundant of the two the name myosinogen is retained and the other, which is certainly a globulin "analogous to the cell globulin which is found in saline extracts of all protoplasmic structures," is termed paramyosinogen. Although it may be convenient to speak of these two proteids separately, they are not really independent. "The unit is protoplasm, and if one of its essential constituents is destroyed protoplasm as such ceases to exist."[1]

The ferments of muscle are also to be included among the proteid constituents of the tissue and most probably are of the nature of nucleo-proteids. One of these is a myosin ferment by which the muscle is coagulated; another is of proteolytic character and is "probably concerned in the disappearance of rigor mortis"; a third is amylolytic and converts starch into sugar—dextrose; a fourth which is glycolytic or sugar destroying and most likely is active in carbohydrate catabolism being made able to do so by the addition of the internal secretion of the pancreas.

The proteids of the nervous tissues form a considerable percentage of the solids, varying, according to Professor Halliburton, from 29 in the nerves to 51 in the grey matter of the brain. The most important of these bodies is a nucleo-proteid which contains but a low proportion of phosphorus and constitutes the greater part of the chromatin. In nerve cells this substance is not so restricted to the nucleus as it is in the cells of other tissues, for being distributed throughout the cytoplasm also it forms what are known as Nissl's granules. The other constituent proteids are both globulins. It is nucleo-proteids also that are the most abundant of the organic constituents of secreting glands, a circumstance that would appear to be connected with the specific functions of those organs—namely, the formation of ferments.

The next group of proximate principles of the tissues are the *fats*. The most abundant of these are the neutral fats consisting of the trivalent alcohol glycine $C_3H_5(OH)_3$, combined with fatty acids, palmitic, stearic, oleic, and others, water being lost in the combination and thus forming what are known as compound ethers or esters. By hydrolysis the fats are split up with the addition of water into the glycerine and fatty acids. The chief glycerides are tri-palmitin, tri-stearine, and tri-olein. Their solubility in ether and insolubility in water are among their most characteristic properties.

Constantly associated with protoplasm, of which they are decomposition products, are some extremely complex bodies which are included among fats, though differing considerably in composition and properties from those just mentioned. They are certainly most abundant in the nervous tissues and it is possible that their presence in muscle is due to the involved nervous elements; some are also to be found in the blood corpuscles, yelk of eggs, semen, bile, and milk. Probably the most important are the so-called phosphorised fats of which lecithin is the best illustration. This substance, of which really there are several forms, contains not only phosphorus in addition to carbon, hydrogen, and oxygen but also nitrogen. On decomposition with hydration it forms a fatty acid, glycerophosphoric acid, and cholin; the last named, containing all the nitrogen of the molecule, is an alkaloid allied to neurin and, as shown by Dr. F. W. Mott and Professor

[1] Biochemistry of Nerve and Muscle, by Professor Halliburton, F.R.S., 1904.

Halliburton in their Croonian lectures before this College, is an important indication of degeneration of nervous tissue and when produced in an amount beyond what can be oxidised into urea is responsible for certain toxic symptoms. Other phosphoretted fats are known as kephalins and myelins. Protagen is also a similar body. Among other products of protoplasmic decomposition is cholesterin, also found very abundantly in nervous tissue. It is a monatomic alcohol composed of carbon, hydrogen, and oxygen.

Fat is most widely distributed throughout the tissues, recent methods of staining having demonstrated its existence in cells not previously known to contain it. Except in the cells of adipose tissue it is not to be found in the nucleus but it occurs as granules and droplets of various size in the cytoplasm, which it sometimes almost entirely replaces. Besides this fat which is visible, by methods of extraction by ether or other agents, a further amount may be obtained from the tissues which otherwise give no indication of its existence but which clearly has to be taken into account in considering the relationship of fat to the living matter.[3]

The *carbohydrates* of the cell closely correspond to the fats both in their distribution, not being met with in the nucleus, and in their relation to the proteid constituents, of which they may be in part decomposition products and in part material about to be dealt with by the bioplasm. Like the fats also these substances are composed of the three elements carbon, hydrogen, and oxygen, the two latter in the proportion to form water. With one exception the number of carbon atoms is six or some multiple of that number and hence they are known as hexoses. They may be conveniently divided into three groups: the monosaccharides ($C_6H_{12}O_6$), represented by glucose, galactose, and mannose; the disaccharides ($C_{12}H_{22}O_{11}$), cane sugar, milk sugar, and maltose; and the polysaccharides $(C_6H_{10}O_5)_n$, glycogen, starch, dextrine, and cellulose. The relationship between these groups is one of progressive condensation with the loss of a molecule of water and conversely, of course, by hydrolysis the higher may be changed to the lower forms. Of these various substances glucose and glycogen are the most important, so far, at least, as the higher animal organism is concerned. For it is to the former that all the others that obtain entrance to the body are converted, or tend to be converted, and it is in that form that the labile carbohydrate occurs in the body, whilst it is as glycogen or animal starch that they are stored pending metabolism in the liver, the muscles, and the tissues generally.

In the muscles also there are to be found dextrine and maltose which are intermediate bodies in the conversion of glycogen into dextrose (Halliburton). There is another body, inosite, to be found in muscle which is of the same empirical composition as glucose, but is not really a sugar, being a member of the aromatic series. Galactose can be obtained from cerebrins which are nitrogenous constituents of nervous tissue and to be regarded as glucosides, otherwise carbohydrates are not found as such in these tissues. The decomposition products of carbohydrates, lactic, butyric, and carbonic acids are all met with in living substance.

Of the inorganic constituents of the living cell water is the most abundant and most important, permitting by the fluidity it confers on the cell contents of those interchanges of matter upon which the vitality of the organism depends. The principal salts are the chlorides of sodium, potassium, and ammonium, the carbonates of the same as well as of magnesium and calcium, together with sulphates and phosphates. Among the less frequent elements found is iron and in very exceptional cells free mineral acids, hydrochloric and sulphuric, are met with. In muscle the potash predominates among the bases and phosphoric among the acids and the same obtains in nervous tissues. Sodium chloride is the most abundant salt in the blood. Some work has been done by a committee of the British Association for the Advancement of Science (which has been appointed to investigate the micro-chemistry of the cell) on the distribution of these substances in the cell. From the experiments it would seem that potassium is not found in the nucleus and is much less abundant in the animal than in the vegetable protoplasm of unicellular organisms, the former apparently being more resistant to its entrance from the surrounding medium than is the latter, but in the intestinal and excretory epithelia of vertebrates considerable quantities of potassium salts are to be found as excretory products. The other important elements which enter into the composition of the protoplasm are phosphorus and iron, both of which are to be found in the chromatin of the nucleus, the latter in a "masked" form and probably combined with the carbon of the nucleo-proteid. Indeed, it may be said that there is good reason to suppose a most intimate and essential association of the various salts with the proteids in the living protoplasm, an association that is broken up when this material dies. Oxygen and carbonic acid in a free state are to be found in all living matter, the latter as a decomposition product and the former concerned, as will be seen, not only in the decomposition processes, but also as playing a very considerable part in the consequent restitution.

Such, then, is an account, most imperfect it must be admitted, of the nature and composition of bioplasm. The problem of nutrition is to explain how this composition is maintained, what preparation the ingesta as they are ordinarily presented to us undergo before they actually reach the cell, and, finally, the removal of those waste products which result from the interchanges in the living matter attendant on the liberation of its specific energies.

THE INGESTA.

In considering what are the essential characters of the ingesta, of the nutrient material, that is, which is needful to maintain the living being in structural integrity and functional capability, it has been usual to draw a distinction between animals and plants and it would appear that this distinction has frequently been made too absolute. For although there can be no doubt as to the very different character of the food material required by, say, an oak tree and a man and how both would starve were the nutriment of the one supplied to the other, yet lower down in the scale no hard-and-fast line can be drawn. Moreover, though the difference between the food of the higher animals and plants appears at first sight to be very considerable the distinction affects the nature of the materials as taken from outside, rather than in the form in which the actual nutriment is presented to the living matter. For the maintenance in structural integrity and functional activity of the bioplasm, be it of a plant or an animal, the food supplied to it must be of a more complex character than such as is absorbed by plants. Proteids and carbohydrates, fats, and some salts are equally necessary to animal and to vegetable protoplasm which correspond therefore closely in essentials. In plants there is for the most part a greater extent of preparation of the ingesta before they are finally made use of; the range of synthetic capacity of the plant is so far greater, and animals start with their food where plants left off, the ultimate form of material presented to the bioplasm being similar in both cases.

Experience has shown that the nutritive requirements of the animal organism are such that the food should contain certain proportions of different substances which correspond to the materials of which we have seen the living matter is composed. A satisfactory diet should therefore consist of proteids, fat, carbohydrates, salts, water, and oxygen, and although the fats and carbohydrates may in great measure be made to replace each other, or may even be entirely withdrawn from the dietary, such modifications can only be tolerated for a limited period and are prejudicial sooner or later to the animal economy. Each group of food-stuffs is necessary, though perhaps in a somewhat different degree. The proteid food is, however, a prime necessity, although, as will presently appear, it may undergo considerable retrogression in chemical complexity before it is presented for assimilation by the living matter. This fact of proteid requirement implies that the animal organism is unable to synthesise from simple nitrogenous substances, such as ammonia or the nitrates obtained from outside and ingested as such, the complex proteid molecule which is the chief component of the protoplasm. Proteid food-stuffs, then, are an essential requisite, whether they be of animal or of vegetable origin. Not so with plants, however, which for the most part, and especially those which contain chlorophyll, are enabled to construct their proteid constituents from such simple nitrogenous compounds as the nitrates, particularly the ammonium salts. There are even some forms which can assimilate free nitrogen, such as certain bacteria found in the soil and even some leguminous plants which are characterised by remarkable nodules on the roots formed as the result of invasion by these soil bacteria. In these cases the range of synthetic power is at its maximum, the organism feeding on the chemical element itself and ultimately building up

[3] By such methods Mr. J. B. Leathes has shown that the different types of muscle vary in the percentage of fat they contain, being greatest in the red muscles.

the complex proteid. In contrast to these stand some saprophytic and parasitic fungi which are absolutely dependent for their proteid construction upon some form of proteid, peptone or other, supplied as such, approximating in this respect to the animal requirements.

Whilst there are many animals—the carnivora—which can exist upon an almost pure proteid diet such a plan could not satisfactorily be followed for an unlimited period in the case of man. In such a case, in order to obtain the requisite amount of carbon and hydrogen, such an enormous quantity of meat or other proteid food would have to be taken as to be almost prohibitive, owing partly to the difficulty of its digestion and partly to the ill effects such a food would entail in various directions. Hence a pure meat dietary within the limits that the individual can deal with falls short in the requirements as regards the carbon and hydrogen which consequently are supplied by the tissues of the individual which is rich in these substances—viz., the fat—and this in great part, though not entirely, explains the action of such a regimen as a treatment for obesity. In consequence carbohydrate and fat foods—one or both and preferably both—come to be a practical necessity. As diminishing the demand for proteid food beyond such an amount as is required to maintain nitrogenous equilibrium they are sometimes spoken of as "proteid sparers," the carbohydrates being of much greater value in this respect, a function that is also performed and more effectively by gelatin, since, though an albuminoid body and so allied to the proteids, it cannot entirely replace them as an article of diet, being apparently unable to supply the nitrogenous requirements of the protoplasm, or, in other words, cannot be built up into tissue.

Now the human organism, and with but few exceptions the animal organism generally, is unable to synthesise from simpler compounds, still less from the elements themselves, the required carbohydrates and fats which they obtain from the vegetable world. In plants these substances are abundantly formed and, indeed, the larger proportion of the constructive material of these beings is of carbohydrate nature—such as sugars, starch, and cellulose. Green plants have the power of so using the energy supplied by rays of light in the presence of chlorophyll as to synthesise carbon dioxide and water into these more complex bodies; the nitrate and nitrite bacteria employ the chemical energy derived from the oxidation of ammonia to nitrous or to nitric acid for the same purpose and it is "possible that organisms may be discovered which are able to make use of other forms of radiant energy for the assimilation of carbon from carbon dioxide."[4]

This dependence of animal and plant life—indeed, this in great measure mutual dependence, since the waste products of the former constitute the food of the latter—is one of the most striking of the harmonies of nature. That master of word-painting, Ruskin, thus expressed it: "The earth in its depths must ever remain dead and cold, incapable except of slow crystalline change, but at its surface which human beings look upon and deal with, it ministers to them through a veil of strange intermediate being; which breathes but has no voice; moves but cannot leave its accustomed place, passes through life without consciousness, to Death without bitterness; wears the beauty of youth without its passion, and declines to old age without its regret."

Although living beings are continuously liberating energy with ceaseless change in the condition of their component materials it does not follow that the intake of pabulum is equally continuous, rather is it periodic. It follows, therefore, that animals and plants must contain a reserve of material suitable for use in tissue construction and force production and so disposed that it may be conveniently drawn upon. In considering the food, therefore, account has to be taken not only of that which is taken into the body from time to time but that which is already stored up in the body in reserve and it is a question whether in some circumstances all the intake may not be stored up for a time before being actually presented to the living matter for disposal—passing as it were through a resting stage. In vegetables this reserve material forms no inconsiderable part of the entire plant. In them the opportunities for the absorption of food are likely to occur at most irregular intervals, sometimes of long duration, dependent as they are upon the amount of light, heat, and moisture. The duration and character of the seasons, the climate, and many other disturbing circumstances, apart from their inability to move from place to place in search of food, render the necessity for a reserve proportionately greater in them than in animals. In plants the reserve food consists chiefly of starch which tends to be accumulated in special reservoirs such as the roots and tubers, but also in the stems and leaves; oils also are stored up and proteids in the form of what is known as aleurone in the seeds, particularly of the leguminous species. Fat in adipose tissue and elsewhere, glycogen, and the proteids of the tissues form the reserve in animals, the first two being probably those which are most properly to be regarded as reserve, since the supply of the needful amount of proteid is commonly forthcoming at sufficiently frequent intervals to meet the demand, but when there is deprivation of food the proteid constituents of the less important organs furnish what is wanted by those structures upon which life depends and to that extent may be looked upon as a potential reserve. It is worthy of note that in plants, and in a great measure also in animals, this reserve which is prepared from the ingesta and represents what is over and above the immediate nutritive needs of the individual is not actually in the form in which it is offered for assimilation; the starch or glycogen has to be converted into sugar before it can be utilised, it has, that is to say, to undergo a change similar to that effected by digestion in the alimentary canal of an animal. This fact has given rise to the comparison of "a plant when living on its reserve materials to an herbivorous animal both as regards the substance of its food and its manner of making it available for nutrition" (Reynolds Green).

Of the inorganic salts sodium chloride is the only one that is purposely added to our food either in the course of its preparation or when being consumed. The other members of this group of substances as previously enumerated which are found in association with the protoplasmic molecule are amply supplied in the ordinary articles of diet; the phosphorus required is derived not from the mineral phosphates but more probably from some organic compound of the element, and it is this circumstance that affords such justification as may be for the employment of glycerophosphates in many cases of impaired nutrition. As bearing on the probable share taken by these substances in the body nutrition it may be mentioned that the proportion of them in the milk of various animals appears to vary directly with the rate of growth of the suckling, thus, e.g., cow's milk is much richer than human in salts and the calf grows much more rapidly than the infant. Further, the food of herbivorous animals contains a much larger proportion of potash than that of the carnivora and the need for extra quantities of chloride of sodium for the former animals is well known. An important purpose subserved by some of these inorganic bodies is the maintenance of the alkalinity of the fluids which bathe the protoplasm, that reaction being a necessity for the exhibition of living activity.

Regarding the quantity of aliment that is necessary to maintain a state of metabolic equilibrium and a condition of general well-being some observations of precision have lately gone a considerable way to confirm what has for long been supposed to be the case—viz., that much more food is ordinarily taken than is absolutely required. The method of estimating the energy value of food by ascertaining the number of calories that a given weight of it yields on combustion has enabled us to formulate a dietary with greater approach to the needs of the organism and to economy than has hitherto been the case. In a paper read in April last year before the National Academy of Sciences at Washington Professor Chittenden showed as the result of a careful and prolonged series of observations made at the Sheffield Scientific School of Yale on a number of the professors, of the students, and of United States soldiers who were placed at his disposal by the Government that the quantity of the solid ingesta required was but a third to a half of that usually taken by the average man. The amount of meat was gradually reduced but enough bulk of food in all cases was consumed to satisfy the appetite. By a very thorough mastication and insalivation of the food—which was an important part of the experiments—it was found that this sense of satisfaction was attained with a smaller quantity than is usually taken. The general hygienic conditions of the subjects of experiments were carefully regulated, with the result that on the greatly diminished diet the individuals kept their weight and vigour and even increased their muscular power and endurance. Although, as I have said, the

[4] Pfeffer: Physiology of Plants. Translated by Dr. Ewart. 1900. P. 232.

outcome of these experiments gave a scientific sanction to ideas that were very widely entertained, they are distinctly at variance with the most authoritative pronouncements of those who have hitherto written on the subject.

In one of the latest works on the subject of dietetics—viz., that by Dr. R. Hutchison—it is laid down that the requisite diet for a man of ordinary weight doing a moderate amount of muscular work should be of a value in potential energy of from 3000 to 3500 calories and that for such an individual "the daily consumption of proteids should never be allowed to sink below 100 grammes but should preferably be 125." This is fully twice as much as that allowed by Professor Chittenden. Whether the more thorough mastication and insalivation insisted on by the latter observer explain the adequacy of the much reduced amount of food remains to be proved, but certainly general experience so far has been against any such reduction in the intake. The time is not yet ripe to accept the dictum "that the animal functions, the tonicity of the structures and organs, in short the normal intra-systemic equilibrium, are the better maintained, the more the sum of the ingested assimilable nutrients is limited to the amount absolutely necessary to keep the body in metabolic balance."[5] The actual character of the food as it is presented makes a good deal of difference. If it be of a coarse nature, such as forms the bulk of that of the working population, a good deal of the energy obtained from the food is used up in the preparation of the rest of it, so that the total and the assimilable nutrients are not by any means the same. It is here perhaps that the advantage of thorough mastication is to be found, but at the same time the general tendency of the diet of the population is to improve in the digestible and assimilable character in which it is offered for consumption.

It will be obvious that the relative proportion in which the constructive and destructive phases of metabolism prevail, which especially governs the amount of food wanted, will in great measure be conditioned by the period of life. Until maturity is attained—i.e., during the period of growth—a large proportion of the intake is devoted to the building up of the tissues and as the demand for chemical energy and for heat is then at its greatest in order to effect the requisite syntheses, the need for fuel food is relatively at its greatest also, hence the total amount of food required per given body weight is far greater in the growing stage than it is later when full bulk is reached. During that time and previously to the decline of life the main purport of the ingesta is to supply the requisite energy and just enough only to maintain the mechanism. A lessened quantity is appropriate to old age when tissue construction has ceased and a diminished energy is manifested in all directions.

THE RELATION OF THE BIOPLASM TO THE INGESTA.

Such, then, are the two material factors of the nutrition problem—the living matter of unknown and perhaps unknowable exact composition, of the chemical nature of which we have any conception from its derivatives only; and, on the other hand, its food which corresponds in great measure to these same derived substances. It now behoves us to consider the active relation of these factors to one another, how it is that the bioplasm deals with the food and the outcome thereof. I need scarcely remark that very much of what one can say in reference to this question is quite hypothetical; but at the same time it may be observed that some ground for these hypotheses is furnished by the results of experiments and such hypotheses but serve to explain in our present state of knowledge the problems with which we have to deal, whilst it is perfectly admitted that such concepts are subject to modification or even overthrowal, should well ascertained facts render this necessary.

Foremost among these fundamental notions is that the living matter in mass, as also in its constituent molecules, "consists of a permanent part which is not concerned in the performance of function and of a collateral part which is used—i.e., disintegrated in every transition of the molecule from the inactive to the active state, to be immediately reconstituted when action ceases."[6] Such an assumption does not exclude the idea of the "permanent part" undergoing a certain amount of wear and tear which necessitates its repair or renewal. And it is further very certain that the "collateral part," the changes in which underlie the manifestations of energy which the living matter exhibits, is of a higher degree of chemical complexity than the ingesta which are destined to replace it and maintain the supply of fuel material which has undergone disintegration. There is, therefore, a series of synthetic changes which the ingesta undergo to enable them to become integral parts of the bioplastic molecule, as there is another series of changes associated with the breaking down of the molecule. Whilst the precise condition of the living molecule is quite unknown to us, it is into the synthetic (anabolic) and analytic (katabolic) changes that gradually light is penetrating. We are often in the habit of speaking of a progressively ascending series of changes which the food undergoes in its passage towards assimilation by the existing living matter, becoming as it does living, and then passing downwards through another series of changes, forming in our minds somewhat the conception of a pyramid up the slopes of which the requisite food-stuffs travel with ever-increasing complexity of composition until when the summit is reached the molecule topples over, as it were from sheer instability, to pursue its descent towards those simpler atom groups which we recognise as waste products, liberating in its progress that energy which it had accumulated in the progress of its synthesis. Although I say we conceive of the anabolic processes as succeeded by those of katabolism it is more than probable that they are in great part coincident and even mutually involved. It may even be the case also that the stimulus to restitution is to be found in the preceding disintegration, the former taking place at the moment that the living molecule splits up.

It has also to be remembered that for the carrying out of the synthetic changes energy is requisite—kinetic energy, that is, which becomes potential in the advancing molecule, later to be reconverted into kinetic as the molecule undergoes decomposition. It is generally believed that the requisite energy for this purpose is derived, in the higher animals at least, from the heat and chemical energy liberated in the course of katabolism—that is to say, the very constructive changes are dependent for their production upon coincident decompositions—and one cannot but marvel at the character and nature of this energy which effects both the synthetic and analytic changes if we compare it with what is requisite to effect those same integrations and disintegrations in the comparatively few cases which we have been as yet able to imitate in our laboratories. The following illustrations will suffice. Indol is a product of proteid decomposition which is readily formed by certain bacteria in the intestine; to produce the same result in our test tubes it is necessary to fuse the proteids with caustic alkalies—a proceeding that would be absolutely destructive, of course, of the living tissues. By passing an alternating current through a solution of ammonium carbonate or by the action of heat on ammonium carbamate urea may be formed and the same occurs on boiling proteids for some hours with hydrochloric acid. Now these processes, which require very strong reagents and some considerable time, are rapidly and easily effected by the living cells or their products.

It is the dependence of the synthetic processes upon the energy supplied by katabolism that justifies my saying, as I did just now, that both anabolism and katabolism are in a great degree coincident and in a measure mutually involved. So far as we know it is by chemical energy that synthesis is effected in the animal body, just as "muscular work is accomplished by the transformation of a corresponding amount of chemical energy,"[7] but green plants have the power of effecting the required combinations by means of sunlight and a few members of the vegetable kingdom can utilise the heat rays of the sun for the same purpose; in both these cases the presence of a pigment, chlorophyll or other, is essential. Whether the hæmoglobin of the blood can play a similar part in animals or whether electrical energy or any other forms of radiant energy are equally capable I do not know.

But whilst we realise that a complex series of anabolic changes intervene between the nutriment as taken into the body and its final incorporation into the protoplasmic molecule, changes which are closely related to those of a katabolic character which result in the production of the body waste, there still remains to be explained the essential point of the whole problem which I have just spoken of as the incorporation into the molecule of the pabulum. The most plausible hypothesis that has been put forward to give an exact meaning to this process which we denominate

[5] Dr. H. Stern: New York Medical Record, May 21st, 1904.
[6] Professor Sir J. Burdon Sanderson, British Association for the Advancement of Science meeting, 1904.
[7] Burdon Sanderson: loc. cit.

"assimilation" is that with which the name of Ehrlich is associated. He conceived that in the protoplasm molecule were certain atom groups which attracted—it may be presumed chemically—corresponding atom-groups of the circulating pabulum and that the receptive atom-groups of the protoplasm are excited to formation as the response to the presence of the nutrient material. To another atom-group he conceives the ferment is attached, constituting as he terms it the "complement" by the action of which the actual assimilation is effected. An extension of this hypothesis constitutes his side-chain theory of immunity.

CHANGES IN THE INGESTA—DIGESTION.

My next step, then, is to put before you in summary—for time permits of no more than that—an account of the successive changes undergone by the ingesta, from their intake to their assimilation by the bioplasm so far as we know or have any conception of them. Obviously the first of these are those which are comprised within the term digestion. It is this function which is concerned with the conversion of the ingesta into such a fluid and diffusible condition as to fit them for absorption into the blood current, which is clearly an essential preliminary to their assimilation by the living cells. Except the inorganic food-stuffs the other elementary principles—proteids, carbohydrates, and fats—require more or less digestion, since, although it cannot be said that all the substances included within these groups are absolutely incapable of being absorbed—for even some native proteids may pass through the intestinal mucous membrane—for the most part the size of their molecules is so great that their diffusibility is extremely slight. It is probable, however, that the absorption of the digested food-stuffs does not depend, as will be seen, entirely on their osmotic pressure but that the living tissue elements which intervene between the gastro-intestinal contents and the blood or lymph current exercise some vital share in effecting the absorption.

The digestive changes in the alimentary canal are brought about, as is well known, by the secretions of special glands that are poured out into the mouth, stomach, and intestines, the efficiency of which depends upon the presence in them of special ferments or enzymes which are the products of the metabolic activity of the gland cells. To a similar source the hydrochloric acid of the gastric juice is to be attributed, the parietal cells of the peptic glands being regarded as specially concerned in its formation from the chloride of the food, probably by the action thereon of the alkaline phosphates. The change the several ferments determine in the various alimentary principles is of the nature of hydrolysis, the substance acted on taking up the elements of water. For their satisfactory action certain conditions must exist, such as a temperature corresponding to that of the body (at a heat of 60° to 65° they are permanently destroyed) and a fairly constant state of acidity or alkalinity of the medium according to the special secretion; thus the pepsin and rennin formed by the central cells of the gastric glands act best in the presence of 0·2 to 0·3 per cent. of hydrochloric acid, a higher percentage than 0·4 hindering the action of the former, which is stopped altogether in an alkaline solution. On the other hand, the pancreatic enzymes, trypsin, amylopsin, and steapsin, will only act in an alkaline medium which is produced by the sodium carbonate of the secretion (as well as the alkaline bile), their efficacy being destroyed in the presence of an acid. The ptyalin of the saliva requires a neutral or slightly alkaline medium[8] and the intestinal juice is also alkaline in reaction. The bile plays a subordinate part in digestion, chiefly aiding the pancreatic juice in virtue of its alkalinity, especially supplementing the fat-splitting enzyme by facilitating the absorption of the resulting soaps which of themselves are not very soluble and also as a stimulus to the intestinal movements; otherwise it is chiefly of an excretory character. Most important is it that the products of digestion should be absorbed out of the way, as an accumulation of them seriously impedes or altogether stops the further activity of the ferments.

As showing still further the complexity of the conditions that obtain in the gastro-intestinal tract it has been found that the several digestive ferments "are to some extent protected from the destructive action of acids or alkalies and high temperature by the presence of proteids. This protection is exerted mainly by the proteid combining with the acid or alkali present and so preventing it reacting upon the ferment," but in certain cases it would seem that the protection is afforded by a combination or interaction taking place between the ferment and proteid. In such manner is the efficiency of the ferments insured against such injurious conditions as might be supposed to be not unlikely to occur and by the agency of the very materials upon which these bodies exert their peculiar activity.[9]

Thanks to the masterly experimental work of Professor Pawlow and his pupils we have been led to realise the progressively interdependent character of the successive stages of the process of digestion. And though we may imitate more or less closely in our test-tubes the individual phases and the entire exclusion from the series of a single stage, as, for instance, by the complete ablation of the stomach which has been found possible with consequent maintenance of nitrogenous equilibrium, yet the close relationship of the various stages to one another is incontestable. Thus it is shown that the special stimulus to the pancreatic secretion is the acid gastric juice, and Professor E. H. Starling, a Fellow of this College, who has especially worked at this subject, has demonstrated that as a consequence of the action of the gastric juice in the intestine on the duodenal epithelial cells a substance called by him *secretin* is formed in them which, being absorbed into the blood, is carried to the pancreas, upon the cells of which it acts as a specific stimulus, exciting a secretion of juice proportional to the amount of secretin present.[10] Moreover, the pancreatic fluid as poured out is inactive and depends upon the admixture with the succus entericus for its effectiveness. And the mode of this interaction is suggestive; the precursor of the proteolytic ferment trypsin is known as trypsinogen but it is not until this latter is associated with a ferment of the intestinal juice named enterokinase that it becomes converted into trypsin.

There is even a more remarkable result that has been obtained by Professor Pawlow's work and that is the influence exerted on the secretion of the digestive fluids by different kinds of food. Briefly stated, it seems that the quantity and quality (i.e., the proportions of water, acid, ferment, &c.) of any juice are determined by the nature of the aliment and in this way each different kind of food excites the secretion of a fluid best fitted for its own digestion, richer or poorer in acid or ferment, and in greater or less quantities as may be required. Thus the secretion that follows on a meat diet differs in amount and composition from that excited by bread, as this again differs from what ensues on taking milk. In this way the gastric juice poured out as the result of normal appetite comes to be modified according to the food taken, and Professor Pawlow maintains that this food-induced secretion is brought about by reflex action, due to a specific stimulation of the terminals of the afferent nerves in the mucous membrane by certain qualities of the food. This subject of the adaptation of the digestive glands to the nature of the diet has been followed up by several workers and some interesting experiments carried out by Dr. Bainbridge[11] showed that lactase, which is the ferment by which milk sugar or lactose is converted into galactose and dextrose, is normally absent from the pancreatic secretion in the adult dog, but that under the influence of a milk diet lactase is present and that this appears to be due to the action of the lactose upon the intestinal mucous membrane leading to the formation of some substance which is carried in the blood stream to the pancreas which is thereby stimulated to produce lactase. The general trend of these experiments, as of others, it may be observed, is towards referring these adaptive secretions to direct chemical action rather than to reflex nervous influence, as contended by Professor Pawlow.

Certainly, among the many recent extensions of our physiological knowledge in various directions, that connected with the digestive ferments is to be reckoned as of the greatest interest and importance, especially as helping us to understand the real nature of the changes which take place in our food in its way to the tissues. The relation of these enzymes to one another, the responses of the living cells to the varying demands made for ferments of different power, whilst but at present only very imperfectly recognised, yet sufficiently suggest great

[8] On this point consult papers by S. W. Cole, Journal of Physiology, vol. xxx., pp. 2, 3, and 4, 1903, on the Influence of Electrolytes on the Action of Amylolytic Ferments, wherein it is shown that the action of dialysed ptyalin on dialysed starch is increased by the addition of very small amounts of acids and of the neutral salts of strong monobasic acids.

[9] Dr. Vernon: Journal of Physiology, August, 1904.

[10] Journal of Physiology, vol. xxviii., p. 325, 1902.

[11] Journal of Physiology, May, 1904.

possibilities in our truer conception of the intimate nature of living processes and to exhibit still more clearly that reaction between living matter and its environment as the fundamental condition of vital activity. That capacity of the bioplasm to form an antitoxin when exposed to a toxin, and that in such case expresses a protective action, is wholly comparable to the formation by that same bioplasm of an enzyme or zymogen which shall deal with the nutrient matter submitted to it for its own advantage and maintenance. And as one injurious agent determines the formation of something which shall render it inert, so may the requisite food call forth the reagent most suitable to effect such changes in it as shall render it useful to the living molecule.

A Clinical Lecture

ON

TWO CASES OF CEREBRO-SPINAL MENINGITIS.

Delivered at St. Bartholomew's Hospital on Feb. 10th, 1905,

BY J. A. ORMEROD, M.D. OXON., F.R.C.P. LOND.,
PHYSICIAN TO THE HOSPITAL.

GENTLEMEN,—The first of these cases was a tuberculous meningitis, affecting both the brain and the spinal cord; the second was a purulent meningitis of uncertain causation, affecting chiefly the cord and setting up abscesses elsewhere, one of which perforated into the peritoneum.

Let me make a few preliminary remarks on the subject of meningitis. An acute diffuse meningitis (by which terms I mean to exclude localised patchy meningitis, such as may be caused by syphilis or by caries of the vertebræ) affects primarily the pia arachnoid and causes effusion of lymph upon the surface of the pia mater and into the meshes of the arachnoid which covers it, that is to say, into the subarachnoid space. Hence when the dura mater is incised and the brain is removed the lymph remains sticking to the surface of the organ and cannot be washed off. And the same thing happens with the spinal cord; after removal it remains covered with sticky lymph. But here it may be noted that upon incising the tube of dura mater the fluid which runs out, instead of being clear and watery, as in health, may be turbid, sanious, or purulent; in other words, the fluid contained in the subdural space, the space that is between the two layers of the arachnoid, shows evidence of the disease (the importance of this will be evident when we come to mention lumbar puncture). In my second case, indeed, the tube of dura mater was simply full of pus which had worked its way out *viâ* the nerve roots and given rise to abscesses in various parts of the body.

It is customary to speak of meningitis as cerebral or spinal or cerebro-spinal. No doubt such distinctions may be observed, but I am inclined to think that a simultaneous affection of the brain and the cord is commoner than is generally thought. Take the case of tuberculous meningitis. Here the symptoms commonly point to the brain and after having examined the brain post mortem and found a meningitis there we are apt to be content therewith, but I have certainly seen several such cases in which, when a further examination was made of the cord, there was found a spinal meningitis which had been previously unsuspected. Again, are not cases of acute spinal meningitis in which the brain is unaffected very rare? My second case comes near to this, for post mortem there was little wrong with the cerebral membranes, yet the initial symptoms indicated that the brain shared in the disease. So I imagine that in acute meningitis the brain and the cord are more likely than not to suffer simultaneously, though it is conceivable that either one or the other may be affected alone.

The causation of cerebro-spinal meningitis is a matter of much importance. Broadly speaking, it appears to be always an infection by micro-organisms of one kind or another. A good classification has been made into primary and secondary meningitis. It is secondary when there exists in the body a known source of infection such as ear disease, bone disease, empyema, or when it is a manifestation or complication of a general infection such as tuberculosis or influenza. It is primary when nothing can be discovered beyond the meningitis itself. That, of course, is merely to state our ignorance, for there must be a source of infection and channels by which it reaches the body; still, for practical purposes the division into primary and secondary serves very well. The next principle of classification is based on the nature of the infecting micro-organism. Secondary meningitis may be due to very various kinds of infection. Tubercle is one of the commonest and a tuberculous meningitis, as you know, stands somewhat apart, since it possesses certain clinical and post-mortem characters of its own. The pneumococcus in cases of pneumonia, staphylococci in cases of abscess or other foci of suppuration, streptococci in erysipelas, the bacillus of influenza, of typhoid fever, or of plague may all cause a secondary meningitis. In some cases the meningitis started by one of these organisms may be complicated by the advent of others, so that there is finally a mixed infection. But primary meningitis, so far as we know, is always due to one of two micro-organisms, either the well-known "pneumococcus" or the less common microbe described by Weichselbaum under the name "diplococcus meningitidis intracellularis" and more shortly called the "meningococcus." Now there are two clinical forms of primary meningitis; the one is the epidemic form, otherwise called cerebro-spinal fever, of which we in England have hitherto had little experience; the other is the sporadic form, cases of which you will see from time to time at this hospital and elsewhere. It is very tempting to associate these two forms severally with the two microbes just mentioned and to suppose that the sporadic form, occurring as it may do in any place and at any time, is due to the omnipresent pneumococcus and that the epidemic form which must take rank with the acute specific fevers is due solely to the meningococcus. This latter point is ably urged by Osler in his Cavendish lecture on cerebro-spinal meningitis. But unfortunately for simplicity and for logical classification this does not seem to be invariably true. The facts, as reviewed by Weichselbaum recently, appear to show that in some epidemics the pneumococcus is present and in some the meningococcus.

I do not propose to go systematically into the symptoms and the diagnosis of meningitis—you will find that in your text-books—but I will draw your attention to a few points. 1. When meningitis occurs as a terminal event in the course of some severe primary disease, such as pneumonia, infective endocarditis, and typhus fever, it may present no really distinctive symptoms, they may be merged in those of the original disease, so that the meningitis is "latent" and only discovered post mortem. 2. In severe cases of meningitis coma may be an early symptom and so pronounced as to mask nearly all the others. 3. Since cerebro-spinal meningitis is an acute infection it presents symptoms which are common to most cases of acute infectious disease; and since there is extensive lesion of the nerve centres there are also general symptoms of nervous disease. Under these heads (one or the other) may be reckoned fever, vomiting, headache, pain in the back, tenderness of the limbs and the trunk, and optic neuritis in a small proportion of cases. But of these the pain in the head (and in spinal cases the pain in the back) is so frequent and so severe that it is almost distinctive. 4. Still more characteristic signs are: (*a*) retraction of the head, with which opisthotonos may be associated. Retraction of the head indicates that the base of the brain or the upper part of the cord is specially involved; thus, in the localised meningitis known as the posterior basic meningitis of infants this is generally a prominent symptom. Yet you should remember that in children when suffering from acute disease, and particularly from pneumonia, retraction of the head may occur but may pass off again completely in a day or two, so that it is unsafe to diagnose meningitis from this sign alone. (*b*) The phenomenon known as Kernig's sign. To obtain this the patient must be placed so that the hip joint is semi-flexed, and while the hip-joint is retained in this position the knee-joint must be extended passively. A contraction of the hamstrings then sets in, which causes resistance to the extension. This is probably due to the pain caused by the tension which is put upon the inflamed sacral nerve roots. A very similar thing may be seen in cases of sciatica. One way of carrying out the movement is to make the patient sit on the edge of the bed and then extend the knee, or, if he cannot do this, flex the thigh

to a right angle as he lies in bed and then extend the knee. 5. Lumbar puncture is an important aid to diagnosis. The object of this operation is to withdraw for examination some of the cerebro-spinal fluid from the lower part of the spinal canal. The patient is put in such a position as makes the lumbar spines prominent and a long fine trocar and cannula are introduced in one of the lumbar interspaces, usually the third, because the level of this space is easily found, being on a line drawn between the highest points of the crests of the ilium. Some operators introduce the trocar in the middle line, others at a point slightly to one side of it, with an inclination towards the middle line. The operation is easy in children but in adults rather more difficult owing to the depth at which the tube of dura mater lies. The fluid thus obtained is in the normal subject clear but in most cases of meningitis it is turbid or even purulent. The sediment obtained from it after standing or by centrifugalisation can be examined microscopically or by cultural methods and it may be possible in some cases to tell by these means not only that there is meningitis but to what micro-organism the meningitis is due. But a negative find does not disprove the existence of disease and it is said that in tuberculous meningitis there is often very little sediment and that no tubercle bacilli are to be found. I will now consider the cases which form the subject of this lecture.

CASE 1.—A young man, aged 20 years, was admitted to the casualty ward on Nov. 28th, 1904, in a semi-conscious condition. A meagre history was obtained from his companion to the effect that for some little time he had not looked well and that six days before admission he went to bed with pain in the lumbar region and in "the ribs"; next day he coughed, and the day after that —i.e., four days before admission—he vomited twice and was feverish. Three days before admission he had headache which soon became worse. Two days before admission he became delirious and noisy, "yelling" for an hour together, and he refused food. It was supposed that he had had hæmoptysis during his boyhood. On admission he was quiet when left alone but would answer no questions nor would he tell his name, only saying, "Let me alone," resisting when examined and wrinkling up his nose and upper lip when disturbed. Thus examination was very difficult, but it was made out that his temperature, pulse, and respiration were natural, that there were no abnormal physical signs in his chest, and that he had no optic neuritis. It might have been thought, therefore, that he was either insane or hysterical, but two symptoms of importance told against this—viz.: (1) that his head was held rigidly and it appeared to give him pain when attempts were made to bend it forward; and (2) that his knee-jerks were almost absent. These two points, coupled with his state of cerebral irritation, suggested a meningitis. The next day (Nov. 29th) he was quieter, but as no urine had been passed a catheter had to be used; this upset him again. He refused his food and had to be fed nasally, which was the occasion for more violence. The bowels, which had not acted during the week's illness, were now relieved by calomel. There was a slight rise of temperature (99° to 100° F.), a further indication that his illness was not due to mere nervousness. Things continued thus till Dec. 1st (three days after admission), when he seemed distinctly quieter and better, though his temperature had risen further (102°) and this apparent improvement was maintained till the 6th. He could be examined more thoroughly now; Kernig's sign was found to be present; the knee-jerks were still absent. A blood count gave 19,000 leucocytes; the Widal test was negative. There was pain in the left hypochondrium but the spleen could not be felt. Though conscious and though not paralysed in his limbs he began to pass his excreta beneath him. There were still no signs of disease in the lungs (Dec. 4th). On the 7th he suddenly became comatose, his breathing being stertorous and his colour bad. Although he came round in half an hour his general condition soon after this began to get much worse; his temperature rose (with fluctuations), reaching on the 8th a maximum of 102·5°. His pulse became frequent and feeble, his respirations rapid, and his colour bad. He died at midday on the 10th, having been ill for 19 days. No lumbar puncture was made on account of his restless, irritable condition, in which he resisted all manipulation. Meningitis was diagnosed but we did not expect that it would prove to be a tuberculous meningitis.

Necropsy.—At the post-mortem examination an irregular cavity with a calcareous wall was found at the extreme apex of the right lung and a focus of caseation with some adjacent pleural adhesions at the upper part of the right lower lobe. Neither of them had been detected during life. The rest of the lungs was simply stuffed with discrete, firm, miliary tubercles. As the patient had neither sign nor symptom of lung disease at first, it seems probable that this outbreak of tubercle took place during the last few days of his life. The spleen was also crammed with miliary tubercles and there were very many on the surface of the liver. All the other organs were natural excepting the meninges. The condition of these was as follows. In the arachnoid and pia mater at the base of the brain was a turbid gelatinous exudation distending the membranes and gumming together the Sylvian convolutions. These parts, the chiasma, the perforate spaces, and the under-aspect of the cerebellum were the principal seats of the effusion, but there was some on the upper surface of the cerebellum. There was an increase of fluid in the ventricles. (No miliary tubercles could be plainly seen and the lymph looked rather more opaque than is usual in tuberculous meningitis, but taking the condition of the other organs into consideration we can hardly doubt that the meningitis was tuberculous.) The spinal cord was covered by a similar effusion, fading away gradually towards the filum terminale.

The following remarks may be made on this case. 1. The meningitis, as is the rule in tuberculous meningitis, was associated with a general tuberculosis. But to judge from the symptoms the tuberculosis of the meninges distinctly preceded the acute outbreak in the lungs. 2. The acuteness of the onset and the severity of the mental symptoms (the patient was practically maniacal) did not resemble the ordinary form of tuberculous meningitis in children, when the development of the disease is much more gradual. But you will find, I think, that tuberculous meningitis in the adult very often presents unusual features of this kind. 3. The spinal meninges were as deeply involved as the cerebral. There are, I know, rare cases of tuberculous meningitis in which the spinal lesion predominates, but usually the cerebral lesion is most marked. In this case the brain and the cord were equally affected. The spinal meningitis could be diagnosed during life by the presence of Kernig's sign, the absence of the knee-jerks, and possibly by the condition of the sphincters.

CASE 2.—The second case was that of a servant girl, unmarried, aged 22 years, who was admitted to Elizabeth ward on June 21st, 1904, her chief complaints being retraction of the head and loss of power in the legs. Her personal and family history was unimportant. The history of her disease was as follows. Three weeks ago she had pain in the back, thought to be rheumatism; for this she left her place and went home. Ten days ago she vomited, once only; the same day her head was noticed to be retracted. Three days ago her knees gave way so that she could not walk. Her memory began to fail at the same time. I find no mention of headache but if I remember right she had headache after admission. She was said to have had otorrhœa and earache but nothing wrong was discovered with her ears after admission, so that possibly this may be discounted. On admission she looked flushed and anxious, her temperature was but slightly raised (99° to 100° F.), but her pulse was very frequent (144 per minute). There was marked retraction of the head and the back was rigid and showed a certain degree of opisthotonos. Her mental condition was peculiar; she was not delirious or violent but she talked in a childish excitable way and appeared to have frequent lapses of memory. There was severe insomnia. Dr. H. M. Fletcher, who saw her on the first day for me, noticed a distinct weakness of the left facial muscles (in both the upper and lower parts of the face). Though this passed off very quickly it is important as showing that the disease probably affected at the outset the base of the brain as well as the cord. The upper limbs were not affected at first. The chest was natural, there was some tenderness in the abdomen, especially in the region of the spleen, but nothing abnormal could be felt there. The lower limbs were tender to touch; there was flaccid paralysis of both, complete in the left and almost complete in the right. There was a certain amount of anæsthesia or rather blunting of sensation in the legs, but not sufficiently definite to be set forth in a chart. The knee-jerks were absent; no plantar reflexes could be obtained. Kernig's sign was obtained in both lower limbs. The bladder was distended and 33 ounces of urine were drawn off. In the sacral region there was a small shallow sinus, the nature of

which was not quite obvious, but a probe entered only a very short way. It certainly did not penetrate to the spine and we finally came to the conclusion that it had nothing to do with her disease. The tenderness of the lower limbs, the flaccid paraplegia, with absence of the knee-jerks, coupled with the peculiar mental state, suggested a peripheral neuritis, but this would hardly account for the paralysis of the bladder, still less for the retraction of the head and rigid spine. A diagnosis of meningitis seemed best to cover the facts. A lumbar puncture was made on two occasions but no fluid was obtained. Probably the interior of the meninges was not reached, seeing that post mortem an abundance of pus was found there. The course of the case was as follows. The retraction of the head improved so that by the end of June it had almost disappeared. The sleeplessness, very troublesome at first, yielded slowly to regular doses of bromides. She remained odd mentally, though she improved slowly in this respect. In the course of the first three weeks the paralysis spread to the hands. She complained of "pins and needles" in them and loss of power so that she could not feed herself. The bladder did not recover, but instead of dribbling from over-distension, as on admission, there was reflex incontinence—i.e., the urine passed involuntarily at intervals. In spite of all care some cystitis developed. The patient became very wasted, as generally happens in prolonged cases of meningitis. Nevertheless, after about six weeks' time she appeared to be improving slightly and I began to think she might eventually recover when events took place for which we were not prepared and which brought about her death. On August 10th there was a discharge of greenish pus per rectum, about eight ounces in amount. A rectal examination made a few days later disclosed a boggy patch on the posterior aspect of the gut. The pus continued to discharge. Early on the 21st she complained of abdominal pain; the abdomen was found to be more distended than usual, resistant, tender, and dull in the flanks. The pulse, never good, became steadily more frequent and feeble and she died that morning.

Necropsy.—The post-mortem examination (made by Dr. Horton Smith Hartley) explained the manner of her death. The brain and its membranes were natural, save that over the cerebellum and the medulla the pia mater was possibly more opaque than usual. The spinal cord showed a purulent meningitis most marked in the lower part of the cord but extending in a less degree up to the cervical region. The tube of the dura mater was full of pus. This pus had made its way along the nerve roots and set up irregular abscesses behind the spinal column in the muscles of the lower dorsal and lumbar regions, on either side of the spinal column anteriorly, and also a large abscess behind the rectum. This last-mentioned abscess had burst into the rectum a little way above the anus, thereby producing the discharge of pus per anum (August 10th), and into the general peritoneal cavity at the level of the brim of the pelvis, thereby setting up a peritonitis from which the patient died. There was pus in the bladder and in the pelvis of the kidneys and the mucous membrane of both these parts was injected. The bones of the spinal column, the sacrum, and the sacro-iliac joints were carefully examined but no source of infection could be found such as might have produced a meningitis. The conclusion arrived at, therefore, was that there was a primary spinal meningitis with secondary abscesses, one of which had perforated the peritoneum and so caused death. The pus from within the meninges of the cord yielded a pure culture of staphylococcus pyogenes albus.

A CASE OF EXCISION OF THE RECTUM FOR CARCINOMA RECTI.

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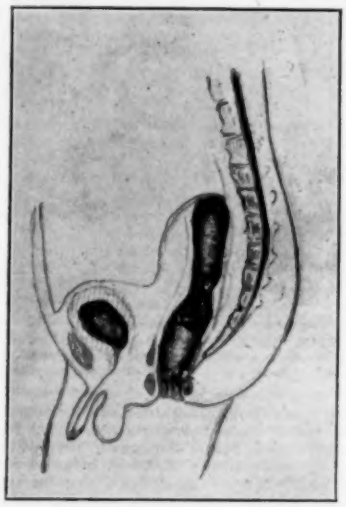
THE following case is so satisfactory in the ultimate result obtained that it seems worth while to record it, having regard to the fact that the practical results in these operations are often so disheartening.

A man, aged 72 years, was admitted to St. Mark's Hospital on Jan. 25th, 1904, suffering from carcinoma recti. The patient had always enjoyed good health until eight months previously to admission when he noticed a "stoppage of water" which was followed by diarrhœa. The diarrhœa had persisted ever since and was accompanied by loss of blood. There was no offensive discharge or any great pain. He had lost 21 pounds in weight during the last three months. He had always been a strong healthy man. Rectal examination revealed an ulcerated growth, mainly in the posterior wall but extending also on to the anterior wall, commencing about three and a half inches from the anus. The growth appeared to be fixed to the deeper tissues. It was decided to prepare the patient for operation and to examine him again under an anæsthetic, being prepared to remove the growth if it was thought possible to do so.

FIG. 1.



Sagittal section of pelvis showing diagramatically the condition before the first operation. Growth seen in rectum.

FIG. 2.

Showing condition after the first operation. Sacral anus formed. Growth removed.

Operation was performed on Jan. 28th. The patient was anæsthetised and the rectum was examined. It was then found that the growth was freely moveable and that the upper limit could be felt. A skin incision was made from

the fourth sacral spine to the tip of the coccyx and all structures were divided down to the bone. The coccyx was removed but the sphincters were left untouched and a portion of the sacrum was taken away by bone forceps. The rectum was freed above and below the growth, the peritoneum being freely opened. A stout silk ligature was passed round the bowel above the growth and the rectum was divided and turned down and again divided below the growth, about three inches of bowel being removed. The two ends could not be united, but one or two sutures approximated the cut surfaces anteriorly and then the upper end was sutured to the sacral opening. The remainder of the incision was closed with silkworm-gut sutures after the wound had been thoroughly irrigated with hot hazeline solution and packed with iodoform gauze. A large tube was passed into the bowel and packed round with iodoform gauze. The operation was remarkably free from hæmorrhage, the bleeding being largely controlled by swabs saturated with hot hazeline solution. The patient made a good recovery and left the hospital three weeks later with a sacral opening.

FIG. 3.

Showing present condition. Sacral anus closed. Upper part of rectum brought down to anal margin. Sphincters intact.

He was readmitted on May 9th, when an ineffective attempt was made to close the sacral opening by freeing the edges of the mucous membrane and suturing the mucous membrane posteriorly, approximating the skin edges and leaving a gauze drain in. This all broke down and he left the hospital in much the same condition as when admitted. He was admitted again on Oct. 10th as the want of control caused him great mental distress. Operation was performed on the 13th. The bowel was freed from its attachment round the sacral opening and separated upwards for about three inches, the peritoneum being again freely opened. The distal part of the mucous membrane between the anus and the sacral opening was entirely removed and the bowel was brought down to the anus and stitched to the skin. The patient made an excellent recovery with the exception that on the eighth day he had a bad rigor and a rise of temperature to 105·6° F. During the rigor the bowels acted freely. This was the first action since the operation. He has now to all intents and purposes a normal rectum with perfect sphincteric control and is in excellent health.

The following points are of practical interest: (1) The control of the hæmorrhage by means of hot hazeline solution of the strength of one drachm to the pint at a temperature of about 100°; (2) the wound was irrigated twice daily after the first 48 hours with either saline or boric solution (this I make a routine custom in all operations for rectal carcinoma); (3) as few stitches as possible were applied to the approximated edges in order that drainage might be as free as possible; (4) the greatest care was taken to divide the bowel well above the growth and when possible well below it and to avoid infecting the wound from the bowel (this was avoided by ligatures and guards); (5) the patient sat up in bed as soon as possible for better drainage from the wound; and (6) the fact that perfect control and practically normal sensation were obtained after such an operation is particularly interesting, having regard to the statements which are made as to the loss of sensation following excision of the lining membrane of the anus.

Harley-street, W.

ON THE ABSENCE OR MARKED DIMINUTION OF FREE HYDROCHLORIC ACID IN THE GASTRIC CONTENTS, IN MALIGNANT DISEASE OF ORGANS OTHER THAN THE STOMACH.[1]

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IT is well known that free hydrochloric acid is absent in nearly all cases of cancer of the stomach. This was first noticed by Reinhard von den Velden[2] in 1879 and has been the subject of much observation and criticism since then but may now be taken as a well-established fact. For example, Osler[3] records that in 94 cases of cancer of the stomach in which the contents were examined free hydrochloric acid was absent in 84 cases. The absence of the free hydrochloric acid has till now chiefly been studied as a diagnostic sign in doubtful cases of cancer of the stomach and has scarcely been considered from any other standpoint. The presence of free hydrochloric acid in a small percentage of cases of cancer of the stomach, as well as the undoubted absence or diminution of the acid in other conditions of the organ or in general disease arising from other causes than cancer, take away greatly from the value of the absence of free hydrochloric acid as a diagnostic sign in doubtful cases suspected of being carcinoma ventriculi. While the above statement may be freely admitted the observed fact remains that in 90 per cent. or over of cases of cancer of the stomach there is no free hydrochloric acid or the acid is reduced to a minimal trace.

Looking away entirely from the question of diagnosis, this is one of the few established pieces of knowledge that we possess regarding cancer and the cause of the absence of the acid deserves careful inquiry on its own account, since knowledge of this may increase our information regarding the disease with which it is associated. Local conditions in the stomach itself have hitherto been made to furnish explanations of the absence of the acid in the gastric secretion in cases where a cancerous growth has invaded that organ. Such growths in many cases are situated in the pylorie region and in process of growth begin to constrict the exit from the stomach. The consequences are dilatation and retention of food in the stomach which causes continued irritation of the secreting mucous membrane and this in time alters the normal character of the secretion which in the end ceases to be acid and becomes simply a catarrhal secretion. Hence the absence of acid, as in long-continued irritation of the mucous membrane by any other means, is due to chronic gastritis giving rise to a catarrhal flow. That this view, which is the usual one with regard to the absence of the acid, does not exactly fit the known facts is seen from the

[1] Abstract of a paper communicated to the Royal Society on Feb. 23th and read on March 16th, 1905.
[2] Deutsches Archiv für Klinische Medicin, vol. xxiii., 1879, p. 31.
[3] Principles and Practice of Medicine, third edition, p. 491.

observations of G. Honigmann and C. von Noorden,[4] who examined series of cases of dilatation and retention of food in the stomach due, on the one hand, to cancer and, on the other, to different causes. In the cancer cases the acid was absent or reduced to traces, while in the dilatations unaccompanied by cancer soon after ingestion of food free hydrochloric acid was present. Secondly, in many cases the absence of acid has been proven early in the development of the growth before there has been any dilatation or marked gastritis. An alternate hypothesis which has been advanced is that the acid is neutralised by alkali poured in from the ulcerating surface of the growth, but this view is also negatived by the early suppression of the acid which often occurs before the surface breaks down from ulceration.

That a small cancerous patch in one region of the stomach, occasionally so situated that it leads to no marked dilatation of the organ nor to any continued retention of food, should, *by some local irritation*, cause the suppression of the acid secretion in the remaining apparently healthy portions of the mucosa, does not seem to present a very feasible explanation. But if the suppression be not due to local action, to gastritis, or to the pathological condition of one portion of the mucosa affecting all the remaining portions, what can the explanation be?

The idea presented itself that the suppression of the acid might be due to a *general* condition in the body, to alterations of the circulating fluid in some way, either by products thrown out by the cancer cells, or as a result of changes in the blood which might lead both to the abnormal growth and atypical mitosis of the cancer cells, and to such changes in the nutrient medium of the oxyntic cells that these could no longer separate hydrochloric acid from the inorganic constituents of the plasma. Such a view, if it could be substantiated experimentally, would naturally give a new importance and a different aspect to what is already one of the most important experimental facts known about carcinoma. The testing of this view was the object set forth in the observations recorded below, which have shown that *the absence of free hydrochloric acid in cancer of the stomach is not due to local action in that organ, for hydrochloric acid is absent or reduced greatly in amount whatever may be the situation in the body of the malignant growth.* It follows that the absence of the acid is due to some change in the blood, which change may either be a common cause of the growth and the absence of the acid, or may be the result of the growth and the cause of the absence of the acid. The significance of this fact will be reverted to after the results of the observations have been described.

The amount of free hydrochloric acid present in the stomach contents was determined in 17 cases of malignant disease situated in different situations such as the uterus, mamma, prostate, rectum, tongue, cheek, and mouth, and in about two-thirds of the cases the free hydrochloric acid was found to be entirely absent, while in the remaining cases the amount found was much below the normal, being reduced to a mere trace in all except one case where it reached about one-fifth of the average amount obtained in control determinations carried out upon ourselves.

METHODS OF EXAMINATION.

The test meal given in each case was that recommended by Ewald of a pint of tea without sugar or milk and a round of dry toast.[5] The length of time before withdrawal of the contents of the stomach was noted in each case and was usually about one hour. The contents before testing were filtered from undigested residues of the food and the tests in all cases were commenced as soon as possible afterwards.

The quantitative volumetric testing was performed by neutralising with deci-normal caustic soda solution, with the indicator mentioned in each case. For convenience of comparison the results are expressed in terms of the equivalent amounts of hydrochloric acid. But it must, of course, be understood that in the case of the phenol-phthalein and di-methyl-amido-azo-benzol indicators the figures do not represent actual free hydrochloric acid, but acidity expressed as the equivalent amount supposing it were all hydrochloric acid.

(*a*) *Total acidity.*—This was determined in the usual way by titration of ten cubic centimetres of the gastric contents with phenol-phthalein as indicator. The amount so obtained gives the total acidity due to hydrochloric acid (when present), organic acids, and acid salts (such as acid phosphates).

(*b*) *Acidity to "di-methyl" indicator.*—This indicator does not give, as originally supposed by its introducer (Töpfer[6]), the free hydrochloric acid alone, but, in addition, any acidity due to free, strong organic acids, such as acetic, lactic, and butyric. Accordingly, this figure is usually higher than that for the free hydrochloric acid given by the other methods described below and the free hydrochloric acid may safely be taken as below the value of this reading. When the organic acids are low in value it gives an approximation to the free hydrochloric acid and as it is often used as a clinical method it is here given for purposes of comparison.

(*c*) *Acidity to Günzburg's reagent*[7] (phloroglucin and vanillin).—We have found this reagent most trustworthy both as a qualitative and a quantitative test. We have convinced ourselves by experiment that the test unmistakably shows 1 part of free hydrochloric acid in 30,000 parts by volume and can be relied upon for accurate results in rapid clinical work where quantitative results are desired, as they always should be.

The use of the Günzburg reagent, in conjunction with titration with deci-normal alkali, which was first recommended by Mintz,[8] was carried out by us as follows. Ten cubic centimetres of the filtered gastric contents are taken, two drops are removed with a glass rod to a porcelain capsule, a drop of the reagent is added from a dropping bottle, and the mixture is evaporated to dryness, preferably on a steam or water bath. If even a trace of free hydrochloric acid is present the characteristic red colour appears. In that case a quantity of deci-normal alkali is added to the ten cubic centimetres of filtered contents, from one- or two-tenths of a cubic centimetre to one cubic centimetre, according to the depth of colour obtained on the initial testing. The process of testing is then repeated; if a positive result is obtained more alkali is added, the testing repeated, and so on, until a negative result is obtained. Near the end, when the reaction is less marked, the alkali is added in quantities of 0·1 cubic centimetre at a time. A little practice enables one to carry out the testing in about five minutes in all and reduces the number of operations to four or five. As only about 0·1 cubic centimetre is removed for each test, and the acid is almost neutralised when the final drops are removed, the loss in this way is very small. In many of the cases of malignant disease the test was negative from the outset, showing entire absence of free hydrochloric acid.

(*d*) *Modified Mörner-Sjöqvist determinations*[9] *of free and combined hydrochloric acid.*—We have used this method as a gravimetric one in the modification described by von Jaksch.[10] The method consists in converting all the acids present into barium salts by the addition of barium carbonate (previously tested and found free from soluble barium salts). Ten cubic centimetres of the gastric contents are taken and about half a gramme of the fine dry barium carbonate powder is added. The mixture is well shaken up and allowed to stand for about an hour; it is then evaporated down to dryness in a platinum or nickel crucible and incinerated. In the process of incineration the barium salts of the organic acids, if any are present, are destroyed and barium carbonate is re-formed, while the barium chloride formed from the hydrochloric acid (free or combined with proteid) present in the gastric contents is unchanged in the process of incineration. After incineration the incinerated mass is extracted several times with hot water and the washings are filtered free from barium carbonate. The end of the process consists in determining the amount of barium salts in solution, which we have done by precipitating as barium sulphate, collecting on a Gooch crucible, and weighing. From the weight the amount of available hydrochloric acid uncombined with fixed base in the original gastric contents is easily determined. In regard to this method it must be stated that it gives not only the total amount of hydrochloric acid free or combined with proteid but also the entire amount of inorganic acid (hydrochloric or other acid possessing a

[4] Zeitschrift für Klinische Medicin, vol. xiii., 1887, p. 87.

[5] Except in one case (Case 9) where the toast could not be taken on account of the situation of the growth and the test meal was a pint of gruel and two pints of water administered by the stomach tube and withdrawn after one and a half hours.

[6] Zeitschrift für Physiologische Chemie, vol. xix., 1894, p. 104.

[7] Günzburg: Chemisches Centralblatt, 1887, p. 1560; Centralblatt für Klinische Medicin, 1887, No. 40.
Wiener Klinische Wochenschrift, 1889, No. 20; 1891, No. 9.

[8] Zeitschrift für Physiologische Chemie, vol. xiii., 1889, p. 1.

[9] Monatsheft für Chemie, vol. x., 1889, p. 211; Klinische Diagnostik innerer Krankheiten, 3te Auflage, 1892, p. 155.

soluble barium salt) free or *combined with organic matter or a volatile base*.

The amount of hydrochloric acid combined with organic base is small in normal cases but in the carcinoma cases it is clear from the results of this and the succeeding method that there is a certain amount of acid neutralised by volatile or organic bases present in the gastric contents.

(*e*) *Total free and combined organic acids.*—An attempt was made to investigate this quantity by the following method. Ten cubic centimetres of the filtered gastric contents are taken and titrated with phenol-phthalein as in (*a*) for determination of total acidity. In this process, as mentioned above, there are neutralised, the hydrochloric acid, the organic acids, and the acid salts (such as acid phosphates). The neutral solution is next evaporated to dryness, incinerated, taken up with hot water, and boiled. In this process the sodium chloride formed from the hydrochloric acid remains unaltered and the neutral salts formed from the acid salts remain neutral; but the neutral organic salts formed from the organic acids, as well as any neutralised organic salts originally present in the gastric contents, are converted into carbonates and give an alkaline reaction. Accordingly the total organic acids present in the gastric contents, whether free or combined, are given by now titrating the solution with excess of acid, boiling to remove carbonic acid and back titration with deci-normal alkali. The results of this method show a very low amount of organic acids in both normal and malignant cases; in fact, in the latter the results are often negative, indicating the presence in the gastric contents of inorganic acid united with organic bases.

The presence under such pathological conditions of such compounds of organic bases with inorganic acid is in itself of high interest and requires further investigation. The small quantity of material obtainable in each case renders it difficult to determine the nature of the bases present but it has been shown not to be ammonia, and that it is not proteid is shown by the controls and the acidity given by the other methods.

(*f*) *Concentration of free hydrogen ions in the gastric contents.*—The usual methods of determining the acidity of a solution give only the potential or total acidity—that is, the amount of standard alkali which must be added in order to render it neutral to an indicator. This is quite a different quantity to the effective acidity, for chemical purposes, of the solution. For example, titration in presence of an indicator will show that a deci-normal solution of the hydrochloric acid and of an organic acid, such as acetic acid, are equal in acidity. This is not, however, the case, the effective acidity of the solution of acetic acid is only about 3 per cent. of that of the hydrochloric acid. The effectiveness as a chemical agent of any acid is proportional to the degree of its dissociation into its ions. For example, hydrochloric acid in the neighbourhood of such concentrations as are found in the gastric contents is over 95 per cent. dissociated into its ions and is correspondingly effective as an acid, while acetic acid in similar concentration is only dissociated to the extent of about 3 per cent. and is correspondingly weakened in its activity as an acid, and the same is true of all the other organic acids occasionally present in the gastric contents.

In the process of titration, as the fraction of dissociated acid is combined with alkali, fresh quantities of previously undissociated acid become dissociated and the indicator does not show neutrality until these also have been combined with alkali. Hence the process of titration does not show the amount of dissociated acid free for chemical work at the commencement of titration. This is, however, the really important thing to determine and to do so some method must be employed which, without altering the condition of dissociation of the acid solution, gives its power of doing chemical work.

A method usually employed in physical chemistry is that of testing the velocity with which the acid solution inverts a solution of cane sugar, or more conveniently a solution of methyl acetate, which becomes changed into methyl alcohol and acetic acid at a rate proportional to the concentration of the hydrogen ions in the solution, which is the real measure for the effective acidity of the solution. The use of the methyl-acetate method not only gives the effective acidity of the solution but by comparison with the total acidity given by titration in presence of a delicate indicator such as phenol-phthalein shows in what degree the acidity is due to hydrochloric and in what degree to organic acids. The method was first used in the case of the gastric contents by F. A. Hoffmann[11] at the suggestion of Ostwald.

The determinations have been carried out by us as follows. Ten cubic centimetres of the gastric contents are taken in a small corked Erlenmeyer flask, 0·5 cubic centimetre of the methyl acetate is added, and five cubic centimetres of the mixture are titrated at once with deci-normal alkali, free from carbonate, using phenol-phthalein as indicator. The flask is then placed for a definite time in a thermostat at a temperature of 45° C. (we have used a period of eight hours but a shorter period would suffice) and at the end of the period the contents of the flask are titrated again; the increase in the amount of alkali required for neutralisation gives the amount of acetic acid set free by the action of the hydrogen ions of the gastric contents during the interval and hence an indication of the concentration of these ions. A simple calculation then gives the concentration of the hydrogen ions. For the purposes of this calculation the total amount of acetic acid capable of being set free from the 0·5 cubic centimetre of methyl acetate added is required and to obtain this a control is made in which deci-normal hydrochloric acid is allowed to act on methyl acetate in the same concentration until the titration gives a constant figure for five cubic centimetres of the mixture. This figure can be obtained once for all for any series carried out about the same time with the same sample of methyl acetate.[12]

A comparison of the results given in the table of the titrations for acetic acid, formed from the methyl acetate in the cases of malignant disease, as compared with those in the case of the normal control specimens, demonstrates clearly the value of the method and shows the great contrast between the cases of malignant disease and the others.

The equation giving the velocity constant of the reaction (K), which is proportional in each case to the concentration of the hydrogen ions, takes the form—

$$K = \frac{1}{t} . \log \frac{A}{A - x},$$

where t is the time, expressed in minutes, A is the amount of methyl acetate available for hydrolysis in the beginning, and x the amount of methyl acetate hydrolysed at the end of the time t. The column in the table gives the values of $K \times 10^5$, to which the concentrations of hydrogen ions or the effective acidities are proportional, and the last column gives the percentage concentration reckoned as effective hydrochloric acid, by comparison with the constant for a deci-normal solution (0·365 per cent.) of hydrochloric acid.

DEDUCTIONS FROM THE RESULTS.

1. The *total acidity* in malignant disease, wherever situated, is, as a rule, very low. In the 17 cases recorded the total acidity only rises above 0·1 per cent. in four cases (Nos. 5, 6, 11, and 16) and reaches the normal amount of approximately 0·28 per cent. in one case only (No. 16). In the great majority of the cases one or two drops of deci-normal alkali added to ten cubic centimetres is sufficient to render the reaction alkaline to phenol-phthalein. In the few cases where the total acidity rises above a trace only the other tests demonstrate that the reaction is not due to free hydrochloric except in minute traces.

2. The "di-methyl" indicator shows entire absence of acidity in nine out of 16 cases in which it was applied and in the remaining cases gives very low values approaching halfway towards normal in only one case (No. 5).

3. The Günzburg test shows entire absence of free hydrochloric acid in 11 out of 17 cases and in the remaining cases the quantitative use of the test shows that with one exception (Case 5) the amount of hydrochloric acid present was only a minute trace (from 0·0036 to 0·0109 per cent.). Case 5 was the only one which had an appreciable amount of free hydrochloric acid and even here the amount present was less than one-fifth the normal quantity.

4. The Mörner-Sjöqvist method gave, as a rule, low results, but in Cases 11, 16, and 17 much higher results were given than by the other methods. There is little doubt that this result arose in those cases from the presence of salts of inorganic acids with organic bases and not to hydrochloric acid either free or loosely combined with proteid.

[11] Verhandlungen des Internationalen Medicinischen Congresses, 1890, Abtheilung v.

[12] The methyl acetate should be as pure as possible, give practically no acetic acid on titration alone, and a control, as indicated above, should be carried out at intervals, if the series of experiments is a prolonged one.

TABLE OF AMOUNT OF ACIDITY OF GASTRIC CONTENTS IN CASES OF MALIGNANT DISEASE IN DIFFERENT SITUATIONS AS DETERMINED BY METHODS INDICATED IN TEXT.

No. of case.	Sex.	Age.	Disease and region.	Period of digestion.	Total acidity to phenol-phthalein.	Acidity to di-methyl.	Free hydrochloric, Günzburg.	Total hydrochloric, i.e., free and organic combined, Mörner and Sjöqvist.	Alkali after incineration, reckoned as HCl.	Increase in titration in cubic centimetres after hydrolysis of methyl acetate.			Constant of velocity of reaction, proportional to real acidity, as shown by concentration of hydrogen ions, K × 10⁵.	Effective acidity reckoned as percentage of HCl from velocity constant.
										Initial.	Final.	Increase.		
1	F.	49	Carcinoma of uterus.	1 hour.	0·0219	Negative.	Negative.	—	—	—	—	—	—	—
2	M.	—	Carcinoma of prostate.	,,	—	—	,,	—	—	—	—	—	—	—
3	F.	—	Sarcoma, general, liver, &c.	1¼ hours.	0·0146	Negative.	,,	—	0·0329	—	—	—	—	—
4	F.	71	Carcinoma of uterus.	,,	0·0036	,,	,,	—	0·0066	—	—	—	—	—
5	F.	50	,,	1 hour.	0·1460	0·0821	0·0305	—	0·0146	—	—	—	—	—
6	M.	61	Sarcoma of neck.	,,	0·1861	0·0036	0·0072	—	0·1533	—	—	—	—	—
7	F.	65	Carcinoma of liver.	1¼ hours.	0·0018	Negative.	Negative.	—	0·0060	—	—	—	—	—
8	F.	32	Carcinoma of rectum.	1 hour.	0·0584	,,	,,	0·0013	0·0036	0·8	0·95	0·15	1·1649	0·09100
9	F.	—	Carcinoma of tongue.	1½ hours.	0·0292	0·0186	0·0109	0·0295	0·0000	0·4	2·2	1·8	14·429	0·01239
10	M.	61	Epithelioma of floor of mouth.	1 hour.	0·0018	Negative.	Negative.	Unweighable.	0·0000	0·1	0·1	0·0	0·000	0·00000
11	F.	49	Colloid cancer of mesentery.	1¼ hours.	0·1058	0·0401	0·0072	0·0738(?)*	−0·1350*	1·55	3·65	2·1	16·934	0·01455
12	F.	59	Carcinoma of breast, removed 10 weeks previously.	1½ ,,	0·0182	0·0091	0·0036	0·0023	0·0000	0·25	1·30	1·05	8·295	0·00713
13	F.	59	Recurrence of carcinoma in breast, removed 4 years before.	,,	0·0511	0·0219	0·0036	—	0·0000	0·85	2·10	1·25	9·913	0·00852
14	M.	65	Epithelioma of cheek.	1 hour.	0·0018	Negative.	Negative.	0·0044	0·0000	0·025	0·05	0·025	0·1937	0·00017
15	F.	66	Carcinoma of breast.	,,	0·0548	0·0019	,,	0·0020	−0·0402*	0·8	1·05	0·25	1·945	0·00179
16(a)	M.	63	Epithelioma of cheek.	3 hours.	0·2665	Negative.	,,	—	0·1533	2·7	2·8	0·1	0·7759	0·00067
(b)				1 hour.	0·2847	,,	,,	0·1479(?)*	0·2044	2·7	2·7	0·0	0·0000	0·00000
17	M.	57	Recurrence of carcinoma of tongue, removed 6 years ago.	2 hours.	0·0365	,,	,,	0·1140(?)*	−0·0657*	0·4	0·4	0·0	0·0000	0·00000
			Control Cases in Normal Individuals.											
R. R. K.	M.	25	—	1 hour	0·2117	0·1789	0·1533	0·1579	0·0018	3·65	17·9	14·85	167·300	0·14373
B. M. ...	M.	38	—	,,	0·3285	0·2884	0·2519	0·2571	0·0000	4·8	25·5	20·7	306·740	0·26266
H. E. R.	M.	23	—	,,	0·3139	0·2482	0·1862	0·3296(?)*	−0·0876*	4·0	21·1	17·1	208·248	0·17892
Average	—	—	—	,,	0·2847	0·2385	0·1971	0·2482	—	—	—	—	227·096	0·1951
N/10 HCl	—	—	—	—	—	—	—	—	—	4·8†	28·2†	23·4†	424·870	—

* See remarks on these two methods in the text.
† Total amount hydrolysed in 24 hours, 31·6 cubic centimetres; in 48 hours, 31·7 cubic centimetres; leaving 26·9 as total available amount of acetate hydrolysable.

5. The presence of inorganic acid combined with organic base is shown by the zero or negative value obtained on incineration with excess of alkali in the attempt to determine the amount of organic acid.

6. The methyl-acetate inversion method shows clearly what small traces of effective acid are present as compared with the normal cases. In all the cases tested the concentration of hydrogen ions never exceeds one-fifteenth part of the normal amount and in the majority of cases sinks incomparably lower even than this low fraction.

7. After removal of the growth, as far as observations have gone, there is not a reappearance of acid. This tends to show that there is a persistence of those conditions in the body tending to favour the re-formation of new growths, but the subject requires more extended observation.

PROBABLE CAUSE OF THE ABSENCE OF THE ACID.

The cause of the absence of the acid from the gastric contents in malignant disease is not yet determined. Various points require elucidation, such, for example, as whether the oxyntic cells are atrophied, whether the acid secretion recurs after removal of the growth, whether any toxic substances are in circulation in the blood which paralyse the activity of the oxyntic cells, and whether the degree of alkalinity of the blood plasma is altered in malignant disease.[13]

A study of the alterations in the alkalinity of the blood seems at present to be one of the most hopeful lines of research on the subject but such observations are most difficult to carry out. For it is not the total alkalinity of the blood which is the determining factor in the power of the oxyntic cells to separate a fluid of acid reaction due to free hydrochloric acid from the blood plasma, but rather the effective concentration in hydroxyl ions and hydrogen ions respectively in the sense indicated above in speaking of the methyl-acetate method.

In order that hydrochloric acid may be separated by the cells of the gastric glands it is necessary that there must be some concentration of hydrogen ions, however low that concentration may be, in the circulating plasma. Further, the concentration of hydrogen ions in the plasma being very low it follows that any agency which depresses that concentration, such as increased alkalinity of the plasma, must increase the difficulty and lessen the rate of separation of acid.

The reactions to indicators of the plasma show that it is a fluid which is, at the same time, alkaline and acid; in other words, that it contains both hydrogen and hydroxyl ions. Thus, it is *acid* in reaction to phenol-phthalein, but *alkaline* to litmus, "di-methyl," and most other indicators. The reaction to phenol-phthalein shows clearly the presence of hydrogen ions in the plasma and the work of the oxyntic cell is to increase the concentration of these ions in the process of secretion; just as the kidney cell increases the concentration of urea in secreting urine from the plasma. The concentration of hydrogen ions in the plasma is excessively low,

[13] Observations upon this point are now being made.

so low that it cannot be estimated by such a method as methyl-acetate inversion or by any physical method at present known. It is accordingly difficult, without some new method of attack, to investigate the effective acidity of the blood and it is probable that in the end some physiological method alone, some application, for example, of the effect of minute quantities of acid or alkali upon the rate of growth or activities of living cells, will furnish a delicate enough test for such measurements of reaction as are here required.

We are hence at present without a method delicate enough to show us how the concentration of the hydrogen ions is varying in the blood plasma in health or in conditions such as malignant disease; but if we suppose that the failure or reduction in quantity of the acid is an indication *through the mechanism of the oxyntic cell* that the concentration of the hydrogen ions in the blood of carcinomatous patients is decreased, and the concentration of the hydroxyl ions increased, then we have indications from analogy with the changes which occur in other growing cells under like conditions that such a change would probably give rise to increased cell growth and division. Thus, Loeb [14] has shown that addition of one cubic centimetre of deci-normal caustic soda solution to 100 cubic centimetres of sea water, that is, an addition of only 0·04 gramme per litre, increased the development and growth of the eggs of the sea urchin at such a rate that one could scarcely believe that the two sets of eggs belonged to the same culture. It is only a trace of additional alkali which causes the increased growth, more than a trace stops it entirely.

Now, given a potential tendency to a typical cell growth and mitosis, to reversion to the sexual type of cell reproduction, it is possible that an increased concentration of hydroxyl ions and diminished concentration of hydrogen ions, would form just the necessary chemical stimulus to start a new growth and determine its continuance and exuberance when started. It might be urged that the testing of such a view was exceedingly simple, merely by the administration of acid, so as to give hydrogen ions to the blood plasma, but the matter is not so simple as it at first sight appears. It certainly is indicated that some attempt should be made to modify the reaction of the blood plasma and if possible to restore the acid-secreting function of the oxyntic cells and we are at present making attempts in this direction. But to keep permanently altered, even by continued therapeutic action, the reaction of the blood plasma is by no means easy of attainment. The reaction of the blood is determined by the agency of the liver and kidney cells, and if these have become set at a definite wrong level of action, all the regulating mechanism of the body is then at work against change of the reaction by therapeutic means. When acid is administered urea is taken and broken up in the body and ammonia obtained which is used to neutralise the administered acid. Hence it is only with large and continued doses of acid, and on approaching the limits of acid intoxication, that any diminution in alkalinity can be hoped for and as soon as the administration of acid is slackened the acid is neutralised by more ammonia obtained from oxidised proteid. Thus, even admitting that the diminished acid secretion is due to diminished concentration of hydrogen ions in the blood plasma, we are still face to face with the problem of how to maintain that hydrogen ion concentration in the blood plasma permanently at a higher level against the competition of the kidney and other cells in the body which are all the time tending to reduce it to its old vicious level.

[14] Archiv für Entwickelungsmechanik, vol. vii., 1898, p. 631. Quoted from Hober, Physikalische Chemie der Zelle und Gewebe, p. 235.

LATENT PNEUMOTHORAX.

BY B. CROSSFIELD STEVENS, M.D., M.S. DURH., F.R.C.S. EDIN.

TEXT-BOOK descriptions of pneumothorax divide the *causes* into phthisical and traumatic and the *varieties* as open, closed, and valvular. The following notes of a case under my care go, I think, to prove that in an asthmatic subject (where there is sure to be emphysema as well) one of the distended air vesicles on the surface of the lung may also attenuate its pleural covering and that this condition plus some slight extra strain may cause the vesicle to burst and allow air to enter the pleural cavity. In the museum of St. Thomas's Hospital, London, is a specimen which I obtained from a post-mortem showing two such vesicles; one was of the size of a hen's egg and the other (joined to it) of that of a pigeon's egg. Had either of these ruptured during life I take it that one would have had a latent pneumothorax to deal with. In Mr. R. Bevan's case [1] a sudden nipping of the edge of the lung with the air vesicles in an over-distended condition was probably the cause of the pneumothorax. In Mr. E. F. Coghlan's case [2] it seemed to be a phthisical patient and the recovery from the lesion was rapid, though no quicker than a non-phthisical case ought to be with proper rest and care.

The case which I wish to quote was that of a young and energetic curate. His history is interesting and is as follows. On the morning of the day before I saw him he was taken ill at Y——. Previously to this attack he had felt quite well but had been thoroughly tired out the day before from considerable manual exertion (he was a keen gardener). On the morning in question he was kneeling in church and experienced a feeling of discomfort round the heart; this was greatly increased on attempting to move. Owing to considerable pain round the heart he was given brandy but with no relief. He then took a cab to see a medical man who called it "wind round the heart" (meaning distension of the stomach) and gave him some carminative. Needless to say, this did no good. The only relief he could obtain was by lying on the sofa on his left side. Feeling relieved he got up and walked away but in a few minutes he was as bad as ever and took refuge in a station waiting-room and was at once relieved by lying down again on the left side. After a while he returned to his medical adviser and asked him to examine his chest. The verdict was "indigestion" and some purgative pills were prescribed. After this he walked about Y—— in great discomfort until his train started for M——, a run of over an hour. He found it difficult to climb the hill to his house but suffered no actual pain as was the case in the morning. Having had practically no food since breakfast he made a hearty supper and went to bed. During the night he got very little sleep and sent for me. I saw the patient within 24 hours of the onset of the illness and found him in bed lying on his left side, in great distress from dyspnœa but not cyanosed. The pulse was quick but good; there was no rise of temperature. There was no distension of the stomach but the heart was nowhere to be found in the left chest. The right lung was working vigorously and was full of rhonchi and emphysematous wheezing. The left side of the chest was quite still and fixed and the lower half appeared bulged out; the general appearance of the chest was barrel-shaped. The voice and breath sounds were absent on the left side. The heart was beating in the epigastrium and to the right of the xiphoid cartilage. On the left side also the percussion note was hyper-resonant from the first with slight dulness at the base behind, the axillary hyper-resonance being the more pronounced. Bruit d'airan was very pronounced and the metallic tinkling was as of water dropping in a cavern. The treatment prescribed was rest in bed, a sedative mixture, and an anti-flatulent diet and alcohol. The breath sounds began to return in less than a week and the heart very gradually came back to the left. In three days the patient was comfortable on his right or sound side. In ten days he was up and walking about but breathless on slight exertion. In just under three weeks he went to Cornwall—his native air—and after staying there for three weeks he was quite well. Of his visit to Cornwall he says: "I got steadily better day by day and after ten days at home could walk up the steepest hill or cliff as fast as any one and without discomfort. A sudden jolt or jar, however, was unpleasant. When there a sudden fall in temperature one night when the windows were wide open in the bedrooom brought on an attack of asthma which lasted six hours." I have forbidden him to cycle up hills or to do heavy gardening or lifting and a year later I hear that he is in good health.

Remarks.—This patient is an asthmatic and his sister is described as a martyr to asthma. As a curate he has been taught to use the lower part of his lungs in phonation so as to save his larynx. This has no doubt been an extra strain on his already over-distended lungs. The treatment in these cases is the expectant one. Put the patient under the best hygienic surroundings, give alcohol if there is distress; the nutriment must be easily assimilable and not such as might give rise to flatulent dyspepsia. Of drugs iodide and arsenic are useful at first, and some petroleum emulsion later.

LANCASTER.

[1] THE LANCET, June 11th, 1904, p. 1652.
[2] THE LANCET, April 16th, 1904, p. 1052.

THE EFFECT OF CERTAIN BATHS AND FORMS OF ELECTRICITY ON THE BLOOD, BLOOD PRESSURE, AND METABOLISM;

WITH REMARKS ON THEIR THERAPEUTIC USES.

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THE following investigation was undertaken to ascertain the effect of certain baths and electrical procedures in use at Harrogate on the blood, on the blood pressure, and on metabolism as indicated by variations in the urinary constituents. It was primarily intended to investigate these points with reference to the more recently introduced electrical "baths" but it was thought that the usefulness of the research might be enhanced by extending it to include some of the other baths which have been long in use with the object of determining whether the physiological results obtained would furnish a rational basis for their therapeutic application. The subjects of the experiments were the authors themselves and the observations extended over 40 days. Their health was normal throughout; the results must therefore be regarded as purely physiological.

Points examined.—These consisted of the determination of the total daily excretion of urea, uric acid, sulphates, phosphates, chlorides, and acidity, the estimation of the hæmoglobin and red corpuscles, the enumeration of the leucocytes, and the measurement of variations in the blood pressure.

Methods adopted.—For the determination of urea the hypobromite method was adopted, Gerard's instrument being chosen. Uric acid was estimated by the Gowland-Hopkins' process; sulphates by the barium chloride method; phosphates by titration with uranium acetate; chlorides by Allen's modification of Mohr's method for the first three weeks, and subsequently by Volkard's method; acidity by titration with deci-normal caustic soda, phenolphthalein being employed as indicator. As regards the blood, hæmoglobin was determined by Oliver's hæmoglobinometer and the volume of the red corpuscles was estimated by Oliver's capacity tube. The leucocytes were counted in the Thoma-Zeiss chamber, the diluting fluid being acetic acid 0·3 per cent. with methyl violet, and the amount of dilution 1 in 25. Blood pressure was determined by means of Oliver's hæmodynamometer. The total urine of the 24 hours was collected daily for the estimation of its constituents. The blood was examined once a day, the time chosen being immediately after rising in the morning when the blood is at its most constant point, before being disturbed by bath, exercise, or breakfast. It was also occasionally examined immediately before and after the baths, as will be detailed presently.

Diets: Subject A (weight 11 stones 1 pound 7 ounces).—Breakfast: bacon, 2 ounces; egg, 1; toast, 2 ounces; coffee, 15 ounces. Lunch: meat, 2 ounces; bread, 2 ounces; cheese, ½ ounce; biscuits, 2 ounces; banana, 2 ounces; water, 10 ounces. Tea: tea, 8 ounces; biscuits, 2. Dinner: meat, 4 ounces; bread, 2 ounces; cheese, ½ ounce; biscuits, 2; apple, 1; water, 10 ounces. Coffee; 4 ounces. Bed-time: water, 10 ounces.

Subject B (weight 12 stones 12 pounds).—Breakfast: egg, 1; toast, 1½ ounces; coffee, 10 ounces. Lunch: meat, 2 ounces; ham, 1 ounce; toast, 1½ ounces; cheese, 1 ounce; celery; milk, 10 ounces. Tea: tea, 12 ounces; milk biscuits, 4. Dinner: meat, 3 ounces; toast, 1½ ounces; cheese, ½ ounce; apple, 1; water, 10 ounces. Bed-time, water, 10 ounces.

Subject C (weight 13 stones 3 pounds).—Breakfast: bacon, 2 ounces; egg, 1; bread, 1½ ounces; tea, 20 ounces. Lunch: meat, 2 ounces; cheese, ½ ounce; bread, 1½ ounces; water, 10 ounces. Tea: tea, 8 ounces; biscuits, 3. Dinner: meat, 6 ounces; cheese, 1 ounce; bread, 2 ounces; apples, 2; water, 20 ounces.

Normal standards of the three subjects.—Before determining these and to arrive at a condition of approximate equilibrium the diet was taken for a week before testing. Estimations were then made daily for four days (in the case of Subject C. for five days) and the average taken, the result being shown in Table I.

TABLE I.

—	A.	B.	C.
Quantity ...	1287 c.c.	1243 c.c.	1167 c.c.
Urea	32·33 grammes.	33·92 grammes.	27·62 grammes.
Sulphates ...	2·30 ,,	2·15 ,,	2·13 ,,
Uric acid ...	0·701 ,,	0·528 ,,	0·656 ,,
P_2O_5	2·49 ,,	2·32 ,,	2·31 ,,
Chlorides in terms of NaCl	12·61 ,,	11·93 ,,	13·29 ,,
Acidity in terms of oxalic acid ...	3·53 ,,	3·41 ,,	3·56 ,,
Leucocytes ...	7085 per c.mm.	12,090 per c.mm.	7766 per c.mm.
Hæmoglobin	95·0 per cent.	107·8 per cent.	101·6 per cent.
Corpuscles ...	95·8 ,,	109·2 ,,	100·4 ,,
Value	0·99	0·986	1·01

THE D'ARSONVAL HIGH-FREQUENCY CURRENT.

The extent to which this form of electricity has been used as a therapeutic agent during the last few years rendered the investigation of its physiological action on metabolism a matter of considerable interest. In examining the literature of the subject we were unable to find any detailed statements as to its effects in this direction. The following facts appear to have been established. Apart from its effects on motor and sensory nerves the respiratory combustion is increased, there being an increased excretion of CO_2 under the current amounting to 37 litres per hour; a more active oxygenation of the blood takes place, leading to a plus heat production of from 79 to 127 calories per hour, the body temperature remaining normal; the excretion of nitrogen and P_2O_5 in the urine is increased. Nutrition is modified and a definite loss in weight varying from one to 22 ounces takes places during the passage of the current.[1] The statements of various observers regarding its effect on blood pressure are contradictory, some finding a rise in arterial tension and others a fall.

For the present investigation the current was administered by the method of auto-condensation (from 350 to 450 milliampères) for 30 minutes on four successive days, followed by the effleuve of maximum intensity obtainable without sparking, applied to the whole surface of the body in succession for 30 minutes on two consecutive days.

Effect on blood pressure.—The effect varied according to the mode of application. Auto-condensation produced a slight transient rise in arterial pressure of from five to ten millimetres of mercury, rapidly falling, however, to normal, the net effect appearing to be *nil*.

TABLE II.

	Mm. Hg.
Subject A.	
Before current ... ... Radial pressure (recumbent)	95
30 minutes' auto-condensation from 350 to 450 milliampères—	
Immediately after ... ... Radial pressure (recumbent)	105
5 minutes after ... ... ,, ,,	95
Subject C.	
Before current ... ... Radial pressure (recumbent)	110
30 minutes' auto-condensation from 350 to 450 milliampères—	
Immediately after ... ... Radial pressure (recumbent)	118
5 minutes after ... ... ,, ,,	110

The effleuve applied continuously to the whole surface of the body produced a distinct fall in blood pressure amounting to 10 or 15 millimetres of mercury. When applied, however, to the abdomen the pressure rose somewhat, though not to its original level. The duration of the fall in pressure after the current ceased to flow was variable but in no case prolonged. Sparking (from 100 to 150 milliampères) combined with gentle massage caused rapid hyperæmia when

[1] Nightingale: Journal of Balneology and Climatology, July, 1904.

vigorously done and gave rise to a papulo-erythematous rash which disappeared after 36 hours. The effect of this form is to cause a more persistent fall of arterial pressure.

TABLE III.

Subject A.

		Mm. Hg.	Weight. st. lb. oz.
Before effleuve ...	Radial pressure (sitting)	105 ...	10 13 11
,, ,,	,, ,, (semi-recumbent)	98 ...	—
5 minutes' effleuve	,, ,, ,,	95 ...	—
15 ,, ,,	,, ,, ,,	90 ...	—
20 ,, ,,	,, ,, ,,	86 ...	—
30 ,, ,,	,, ,, ,,	85 ...	—
After effleuve ...	,, ,, (sitting)	90 ...	10 13 7
10 minutes after effleuve	,, ,,	98 ...	—

Subject C.

	Radial pressure (semi-recumbent) Mm. Hg.	Weight. st. lb. oz.
Before effleuve	112 ...	13 2 9
After 7 minutes' effleuve	107 ...	—
,, 20 ,, ,, ...	105 ...	—
,, 30 ,, ,, ...	103 ...	13 2 8

Subject A.

	Radial pressure (semi-recumbent). Mm. Hg.	Weight. st. lb. oz.
Before effleuve to abdomen	100	10 13 12
After 15 minutes' effleuve	90	—
,, 20 ,, ,, ...	85	—
10 minutes' effleuve to abdomen	90	—
5 ,, afterwards	90	10 13 10

Subject A.

	Mm. Hg.
Before sparking ... ... Radial pressure (semi-recumbent) ...	96
After 15 minutes' auto-condensation and 15 minutes' sparking to limbs and body ... Radial pressure (semi-recumbent) ...	85

It would thus appear that the divergent results on arterial pressure previously obtained may be due to the different forms of current employed, auto-condensation causing a temporary rise and the effleuve a decided fall, both results having been obtained on all occasions. From the above table it will be seen that a slight loss of weight, varying from one to four ounces, occurred in normal subjects, thus corroborating Nightingale's results.

Effect on the blood.—Observations on the blood immediately before and after the application of the current were not made. The morning observations, however, showed an increase in the amount of hæmoglobin during the days on which the current was taken over the average of the preceding days on which no current was applied. The corpuscles, on the other hand, were relatively diminished on the bath days, consequently there was in both the subjects of experiment an increase in the hæmoglobin "value" of the corpuscle; in one case (Subject C) from 1·01 to 1·025 after six applications and in the other (Subject A) from 0·99 1·025 after nine applications.

Effect on metabolism.—The effect on the urinary constituents is shown in the following table:—

TABLE IV.—*Subject C.*

—	Average of five preceding days.	Average of four days' auto-condensation, 30 minutes daily, from 350 to 400 milliampères.	Average of two days' effleuve, 30 minutes each day.
Quantity	1167 c.c.	1197 c.c.	1355 c.c.
Urea	27·62 grammes.	33·39 grammes.	32·85 grammes.
Sulphates... ...	2·13 ,,	2·50 ,,	2·88 ,,
Uric acid	0·656 ,,	0·718 ,,	0·769 ,,
P_2O_5	2·32 ,,	2·46 ,,	2·61 ,,
Chlorides	13·29 ,,	10·75 ,,	15·37 ,,
Acidity in terms of oxalic acid	3·56 ,,	3·25 ,,	2·84 ,,

It will be seen that the application of the current in these two forms in succession produced a marked increase in the excretion of urine, an increase in urea, uric acid, sulphates, and phosphates, and a marked diminution in acidity. In Subject A the results were in the same direction though to a somewhat less extent. It would thus appear that the passage of the high-frequency current has a distinct effect upon the metabolic processes, a result which must be tentatively explained as the outcome of increased tissue change. It may be mentioned as a point of interest that both subjects were struck by the fact that the effleuve to the abdomen excited marked peristaltic action, leading to the free passage of flatus for some hours after exposure to the current and in one subject to repeated diarrhœa. This accords with the results of Crombie and Bokenham[3] on the effect of the effleuve in promoting contraction of the stomach in cases of dilatation. Further, the rise in blood pressure which results when the effleuve is applied to the abdomen is in all probability due to stimulation of the splanchnic vessels.

CONSTANT CURRENT AND SINUSOIDAL CURRENT IMMERSION BATHS.

Sinusoidal current.—This bath was taken on three successive days. The water used was a mild alkaline sulphur water derived from the Beckwith Spring. It was given at a temperature of 98° F., the duration of the bath being 20 minutes, during which time the alternating current (60 milliampères) was passing through the water.

Effect on blood pressure.—No effect was observed other than that usually found as the result of an ordinary sulphur bath at a temperature of 98°—viz., a fall of about 15 millimetres of mercury which returned, however, to the normal immediately after the bath, for example:—

TABLE V.

Subject B.

	Mm. Hg.
Before bath ... ... Radial pressure (recumbent)	95
Bath: Beckwith sulphur water (98°), sinusoidal current, for 60 milliampères, 20 minutes:—	
In bath 10 minutes ... ... Radial pressure (recumbent)	85
,, ,, 15 ,, ... ,, ,,	80
Immediately after bath ... ,, ,,	95

Effect on blood.—This was practically *nil*, no changes worthy of note being observed.

Effect on metabolism.—The sinusoidal current produced no distinctive change in the urinary constituents.

Constant current.—This bath was taken on four successive days, the same (Beckwith) water being used at a temperature of 98° F.; the duration of the bath was 20 minutes with a current of 200 milliampères.

Effect on blood pressure.—No change in the blood pressure before and after the bath was observed. A warm sulphur bath at 98° has usually the effect of reducing the blood pressure for a variable period after the bath and the effect of both sinusoidal and constant currents appears to be to abolish this fall and to maintain the pressure.

Effect on metabolism.—In contradistinction to the sinusoidal the constant current determined a slight increase in the excretion of urea and uric acid.

TABLE VI.—*Subject B.*

—	Average of three free days.	Average of three sinusoidal baths.	Average of four constant current baths.
Quantity ...	1047 c.c.	1178 c.c.	1102 c.c.
Urea	34·96 grammes.	34·78 grammes.	35·95 grammes.
Sulphates ...	2·23 ,,	2·27 ,,	2·35 ,,
Uric acid ...	0·519 ,,	0·514 ,,	0·641 ,,
P_2O_5	2·29 ,,	2·19 ,,	2·33 ,,
Chlorides ...	8·47 ,,	8·32 ,,	7·8 ,,
Acidity in terms of oxalic acid	2·67 ,,	2·78 ,,	2·78 ,,
Leucocytes ...	8346 per c.mm.	8200 per c.mm.	8135 per c.mm.
Hæmoglobin..	103·3 per cent.	101·6 per cent.	106·0 per cent.
Red corpuscles	100·6 ,,	102·3 ,,	106·0 ,,
"Value" ...	1·027	0·993	1·00

LIGHT AND OZONE BATH.

This bath is essentially an electric-light bath with the addition of the high-frequency current and the inhalation of an ozonised atmosphere. It consists of a large cabinet in which the patient lies on a glass shelf, exposed to the rays

[3] THE LANCET, Oct. 18th, 1902, p. 1043.

from a series of incandescent electric lamps suspended about 18 inches above the body, the eyes being protected from the glare by the interposition of a green shade. The temperature of the interior of the cabinet is usually about 100° F., that of the surface of the body exposed to the heat being about ten degrees higher. During the bath a continuous manufacture of ozone is proceeding by means of a high-frequency current streaming off a circular brush electrode placed in a corner of the cabinet. The duration of the bath is usually 25 minutes, during the last ten of which a high-frequency current is passed through the body from a glass vacuum electrode held in the hand. After the bath a sponge down is given preparatory to cooling off.

A good deal of work has been done on the physiological effect of electric light baths, notably by Kellogg[3] and M. Cleaves,[4] but, as in the bath under consideration, the two additional factors of the high-frequency current and the inhalation of ozone are introduced the results are not strictly comparable. Kellogg states that in the electric-light bath, sweating sets in earlier and is more profuse than in any other form of hot bath; that the elimination of CO_2 is greater; that there is a rise in body temperature during the bath; that there is an increase in the blood count—especially of the red cells—of from 10 to 20 per cent., which appears within half an hour and persists for some time and that in cases of marked anæmia the increase is usually permanent if daily application be made. Cleaves states that in some cases the hæmoglobin and corpuscles are increased but not in others. The bath was taken by two observers; by one four days in succession, by the other three days.

Effect on blood pressure.—The blood pressure always showed a great fall—greater than is usually obtained by exposure to a similar degree of heat in any other form of hot bath. The fall, however, is of brief duration, disappearing soon after the bath, e.g. :—

TABLE VII.

Subject A.

		Mm. Hg.	Body temperature.
Before bath	Radial pressure (sitting)	97	98° F.
,, ,,	(recumbent)	87	—
Bath: temperature of cabinet, 100° F.; that of surface of body exposed to light, 110° F.—			
In bath 5 minutes	Radial pressure (recumbent)	70	—
,, ,, 10 ,,	,,	60	—
,, ,, 15 ,,	,,	55	100·0° F.
High frequency current passed through body—			
In bath 20 minutes	Radial pressure (recumbent)	50	100·2° F.
5 minutes after bath	,, ,,	75	99·8° F.
10 ,, ,, ,,	,,	80	—
25 ,, ,, ,,	(sitting)	95	99·0° F.
40 ,, ,, ,,	,,	...	98·6° F.

Effect on the blood.—The immediate effect on the blood taken before and after the bath was to cause an increase in the number of erythrocytes which attained its maximum about half an hour after the bath.

TABLE VIII.

Subject A.

	Red corpuscles.
Before bath	98 per cent.
Immediately after bath	95 ,,
30 minutes after bath	104 ,,

The morning examination of the blood showed that the series of baths caused a slight decrease in the amount of hæmoglobin and a marked decrease in the number of the corpuscles, with a consequent striking rise in the value of the corpuscle: in Subject A. from 0·99 to 1·045; and in Subject B, from 0·986 to 1·07.

TABLE IX.

Subject B.

	Average of four free days.	Average of four light and ozone baths.
Hæmoglobin	107·2	105·3
Erythrocytes	109·2	98·3
Value	0·986	1·07

[3] Cohen's System of Physiologic Therapeutics, vol. ix.
[4] New York Medical Journal, 1899.

Subject A.

	Average of all free days (10).	Average of free days immediately preceding light and ozone.	Average of three light and ozone baths.
Hæmoglobin	94·3	97·0	96·2
Erythrocytes	94·1	93·0	90·7
Value	1·00	0·99	1·045

This conspicuous result raises the question, to which of the factors concerned is it to be attributed? It will be shown that the Dowsing radiant heat, which is essentially an incandescent electric-light bath, causes a fall in the value of the corpuscle—hence the rise obtained must be attributed to some other factor; and as the high-frequency current alone causes a slight but not marked rise the ozone remains the probable cause. To determine this point exposure to the ozonised atmosphere within the cabinet for 25 minutes daily was undertaken on three successive days without the electric light and the high-frequency current, and the blood was examined each morning and for three days previously. The result showed a rise in value from 0·986 to 1·043, thus clearly proving ozone to be the factor concerned. The blood examined before and after inhalation of the ozone showed an immediate rise in value, in one case of 7 per cent. after 35 minutes in the cabinet, in another of 4 per cent. after 25 minutes.

TABLE X.

Subject C.

	Value of corpuscle.
Average of three morning observations prior to ozone	0·986
Average of three days' inhalation of ozone atmosphere 30 minutes each day	1·043

Subject C.

	Red corpuscles, per cent.	Hæmoglobin, per cent.	Value of corpuscle.
Before exposure to ozone	100	98	0·98
Immediately after 35 minutes' exposure	100	105	1·05

Subject A.

Before exposure to ozone	98	95	0·97
Immediately after 25 minutes' exposure	98	99	1·01

The suggestiveness of this result in the treatment of anæmia is sufficiently obvious to need no comment.

Effect on metabolism.—A reference to Table VII. will show that the body temperature is raised about 2° F. during the bath. The effect of these baths on the urinary output appears to be slight. They produced in both subjects a diminution in the quantity of urine passed, a slight fall in the excretion of urea due probably to loss in the perspiration and a slight rise in the excretion of uric acid and phosphates, the sulphates being unchanged.

SUPERHEATED AIR BATHS—DOWSING-GREVILLE.

The Dowsing and Greville systems of applying very high temperatures to the body either locally or generally are too well known to require detailed description, the Dowsing being a luminous heat supplied by ordinary incandescent lamps and the Greville a non-luminous heat engendered by the passage of an electric current through a large number of fine wires. The object of this investigation was to determine the effect of these baths on metabolism and the advantages, if any, possessed by one system over the other.

Dowsing radiant heat bath.—This bath was taken by two observers, A. and C., in both cases on four successive days and at a temperature of from 280° to 300° F. applied to the whole body for 30 minutes.

Effect on the blood pressure.—Like all hot baths the Dowsing produces a marked fall in arterial blood pressure but, as will be seen on comparison with the results obtained in the Greville bath, the fall is greater at a lower temperature when the factor of light is introduced.

TABLE XI.

Subject C.

		Mm. Hg.	Red corpuscles.	Temperature.
Before bath	Radial pressure (sitting)	115	98%	97·2° F.
,, ,,	(recumbent)	105	—	—
Bath (280° F.) to whole body for 30 minutes.				
In bath 20 minutes.	Radial pressure (recumbent)	65	—	99·2° F.
5 minutes after bath.	Radial pressure (recumbent)	72	94%	—
15 minutes after bath		—	—	99·4° F.
45 minutes after bath.	Radial pressure (sitting)	107	102%	97·8° F.

Effect on the blood.—As will be seen in the above table the immediate effect on the blood is to cause a primary diminution in the number of corpuscles with a subsequent increase after the bath. The remote effect on blood examined on successive mornings is a marked reduction in the value of the corpuscle, in one case from an average of 1·00 to 0·973 (Subject A), in another from 1·002 to 0·957 (Subject C), as the result of 4 baths.

TABLE XII.

Subject A.	Average of free days.	Average during Dowsing	*Subject C.*	Average of free days.	Average during Dowsing.
Hæmoglobin...	94·3%	95·0%	Hæmoglobin	101·3%	95·7%
Erythrocytes	94·1%	92·5%	Erythrocytes	101·0%	100·0%
Value	1·00	0·973	Value	1·002	0·957

Effect on urinary constituents.—A marked reduction in quantity of urine and a slight reduction in urea and acidity were observed, and a marked increase in uric acid output and in phosphates.

TABLE XIII.—*Subject A.*

—	Average free days.	Average Dowsing baths.
Quantity	1251 c.c.	848 c.c.
Urea	32·01 grammes.	30·41 grammes.
Sulphates	2·21 ,,	2·19 ,,
Uric acid	0·687 ,,	0·776 ,,
P_2O_5	2·41 ,,	2·86 ,,
Chlorides	9·77 ,,	8·44 ,,
Acidity	3·22 ,,	2·54 ,,

Greville bath.—This bath was taken by Subject C. on four successive days at a temperature of 300° F. for 30 minutes. This temperature was more comfortably borne than a temperature of 280° in the Dowsing bath, the scorching sensation experienced in the latter being notably absent. Sweating in this Subject (C) began sooner and was more profuse in the non-luminous heat than in the luminous heat.

The effect on blood pressure is shown in the following table:—

TABLE XIV.

Subject C.

		Mm. Hg.	Body temperature.
Before bath	Radial pressure (sitting) ...	115	97·4° F.
,, ,, ...	,, ,, (recumbent)	105	—
Greville bath: reaching	250° F. in 13 minutes ...	—	—
,, ,, ,,	295° F. in 15 ,, ...	—	97·6° F.
,, ,, ,,	302° F. in 27 ,, ...	—	99·8° F.
In bath 32 minutes...	Radial pressure (recumbent)	80	—
15 minutes after bath	,, ,, (sitting) ...	90	98·6° F.
30 ,, ,, ,,	,, ,, ,, ...	100	—
80 ,, ,, ,,	,, ,, ,, ...	112	—

It will be seen that the reduction in blood pressure at a temperature of 300° F. in the Greville bath is not so great as that caused by a temperature of 280° in the Dowsing.

Effect on the blood.—A similar immediate diminution in the volume of the corpuscles took place during the bath with a subsequent rise about half an hour afterwards. The remote effect on the value of the corpuscle, however, differed from that obtained in the Dowsing bath, for a notable increase in hæmoglobin value was observed as the result of the four baths, the average value rising from 0·99 on the days prior to the bath to 1·02 on the bath days.

Effect on metabolism.—The following table gives the results obtained.

TABLE XV.—*Subject C.*

—	Average of free days (before bath).	Average, Greville baths.
Quantity	1190 c.c.	1320 c.c.
Urea	29·25 grammes.	29·62 grammes.
Sulphates	2·06 ,,	2·96 ,,
Uric acid	0·654 ,,	0·729 ,,
P_2O_5	2·17 ,,	2·45 ,,
Chlorides	11·13 ,,	11·65 ,,
Acidity	3·57 ,,	3·14 ,,

Contrasting these results with the Dowsing bath it will be seen that the quantity of urine is markedly increased. Now an increase of urine is usually accompanied by an increased excretion of urea, which, however, as the result of the baths, is not apparent in the table. There was, therefore, probably a relative diminution in the quantity of urea excreted by this channel. The uric acid was markedly increased, as occurred with the Dowsing bath, and an increase was observed in the sulphates and phosphates. It will therefore be seen that the great circulatory changes induced by both forms of baths have a marked effect in modifying the metabolic processes.

Comparing the results obtained from the two baths respectively it would appear that the effects common to both are an initial reduction of the volume of the corpuscles with a subsequent increase and a marked plus excretion of uric acid. On the other hand, the most important points of dissimilarity lie in the reduction of hæmoglobin value of the blood by the Dowsing bath and its increase by the Greville bath, and in the greater fall in blood pressure induced by the former than by the latter at corresponding temperatures. The explanation of these points of difference is not obvious. The only factor present in the Dowsing system, beyond those at work in the Greville system, is the presence of the light rays; these, however, do not impinge directly upon the skin—a layer of lint intervening through which they must pass before reaching the surface.

It has been shown by one of us[5] in experiments performed on the dog that luminous heat causes a greater reaction at a lower temperature and raises the body temperature both local and general, to a greater degree than the non-luminous heat. The hind limb of a dog was exposed to a temperature of 250° in the Dowsing box for 45 minutes, at the end of which time the temperature of the venous blood returning from the limb had risen from 95·8° to 111°, and the general temperature of the body from 95·8° to 99·3°. A similar experiment performed with the non-luminous heat by the Greville system at a temperature of 300° for 45 minutes (i.e., 50° higher than the Dowsing bath) caused a rise of only 6·6° in the venous blood returning from the limb, and a rise of 1·8° in the general body temperature.

BERTHE AND VICHY BATH.

This bath was taken by Subject A on four successive days. It was investigated, since it is a bath in frequent use in this country and on the continent for chronic gout and other nutritional disorders. The bath consists of a preliminary exposure to steam heat at a temperature of 120° F. for 15 minutes in the Berthe box—a closed cabinet in which the patient sits with his head protruding through an aperture in the top. This proceeding is then followed by massage administered for 20 minutes in the recumbent posture under a spray douche of from 98° to 100° projected upon the patient from a bracket suspended above the table and pierced by innumerable pin-holes. A needle douche begun at 98° and gradually reduced to cool or cold completes the bath, after which the patient rests for half an hour or more till perfectly cool.

Effect on blood pressure.—The following table will illustrate the changes which take place in blood pressure:—

TABLE XVI.

Subject A.

		Mm. Hg.
Before bath	Radial pressure (sitting)	95
After 15 minutes in steam box at 120° F.	,, ,, ,, ...	75
After 20 minutes' massage and one minute in needle bath reduced from 98° to 55° F.	,, ,, ,, ...	110
5 minutes after	,, ,, (recumbent)	85
15 ,, ,, ...	,, ,, (sitting)	107
30 ,, ,, ...	,, ,, ,, ...	105

It will be seen that the net effect is a rise in blood pressure, which may help to explain the notably invigorating properties of this bath.

Effect on the blood.—The remote effect on the blood was to cause a slight rise in hæmoglobin value from 1·01, average on the three days prior to the baths, to 1·02, average on the four days on which the bath was taken.

Effect on metabolism.—The effect on metabolism was not marked, as might have been expected, a slight rise in the urea, sulphates, and uric acid being noted.

[5] Bain: Journal of Balneology and Climatology, April, 1900.

TABLE XVII.—*Subject A.*

—	Average three free days.	Average four days (Berthe and Vichy).
Quantity	1141 c.c.	1067 c.c.
Urea	32·18 grammes.	33·10 grammes.
Sulphates	2·06 ,,	2·19 ,,
Uric acid	0·686 ,,	0·696 ,,
P_2O_5	2·46 ,,	2·37 ,,
Chlorides	6·76 ,,	7·80 ,,
Acidity...	3·05 ,,	2·96 ,,

PEAT BATHS.

The material for these baths is obtained from the moors in the neighbourhood of Harrogate and consists of peaty earth highly charged with organic acids and containing a small proportion of iron. It is mixed to the consistence of thick pulp and raised by steam to a temperature of from 98° to 104° F. The duration of the bath was 20 minutes: it was taken by Subject B. on three successive days. The main object was to ascertain its effect, if any, on metabolism. Its effect on the blood pressure and on the blood was found to be the same as that of plain water at the same temperature.

Effect on metabolism.—The effect on the urinary output was as follows. A marked diminution in the quantity of urine passed was noted and in the excretion of urea, the other constituents showing no distinctive change. (*Vide* Table XVIII.)

TABLE XVIII.—*Subject B.*

—	Average excretion of free days.	Average excretion, three peat baths.
Quantity	1206 c.c.	957 c.c.
Urea	33·51 grammes.	30·94 grammes.
Sulphates	2·09 ,,	1·96 ,,
Uric acid	0·501 ,,	0·494 ,,
P_2O_5	2·19 ,,	1·89 ,,
Chlorides	9·42 ,,	8·46 ,,
Acidity	2·62 ,,	2·27 ,,

THERMAL SULPHUR BATH.

The so-called thermal sulphur bath is the strongest form of natural sulphur bath administered at Harrogate and consists of the pure sulphur water, undiluted, raised to the required temperature by passing through a "therma" or heating apparatus of coiled tubing. It contains about 235 grains per gallon of total solids, consisting chiefly of chlorides and carbonates of sodium, calcium, and magnesium, the chloride of sodium being largely in excess and the carbonates forming relatively a very small proportion of the whole. Sulphur occurs in the bath in the form of sodium sulphydrate, amounting to about two grains per gallon, and as sulphuretted hydrogen gas, about two cubic inches per gallon. It is the staple bath at Harrogate and was investigated to determine whether any effect on metabolism could be detected as the result of a short series. It was taken by Subject C on four successive days at a temperature of 98° F. for 20 minutes. No appreciable effect was observed on the urinary constituents beyond a marked increase in the quantity voided, though possibly a more prolonged trial might be found to have a more distinctive influence.

SUMMARY OF RESULTS AND THERAPEUTIC INDICATIONS.

The high-frequency current since its introduction has been used in the treatment of a great variety of affections, both local and general. Among the general affections may be mentioned gout, chronic rheumatism, obesity, diabetes, neurasthenia and hysteria, anæmia and chlorosis, phthisis pulmonalis, atonic dilatation of the stomach, and chronic colitis. Among the local affections, skin diseases—such as lupus, lupus erythematosus, psoriasis, chronic eczema, acne rosacea, rodent ulcer, chronic callous ulcer, pruritus ani and vulvæ—and local affections of the nerves—such as sciatica, neuralgia, local neuritis—are frequently treated by this form of electricity. In the treatment of hæmorrhoids good results are obtained from its use.

The physiological action of the current in its general application tends to confirm its use in cases of nutritional disorders, such as chronic gout, chronic rheumatism, and obesity, by reason of the changes effected in blood pressure and the stimulus given to metabolism, as shown by the plus heat production, the plus excretion of urea, of uric acid, and of CO_2, and the loss of weight. The rise produced in the hæmoglobin value of the corpuscle points to its use in the above cases when anæmia is a prominent symptom and also as a useful adjunct in cases of simple anæmia and chlorosis. The distinct contraction of unstriped muscle fibre excited by the effleuve indicates a trial of the method in cases of atony of the hollow viscera and may also account for the striking results sometimes observed in the shrinking and disappearance of hæmorrhoids after repeated applications. The evidence for its real value in cases of diabetes and phthisis does not appear to rest upon a sufficiently large number of cases to carry conviction as to its superiority over other modes of treatment. With regard to its action in local affections of the nerves and skin the foregoing results offer no evidence for or against. In our judgment, after considerable experience of the methods, the results obtained from the local application of the current are, on the whole, more favourable than those obtained from its general use.

Electric immersion baths are used largely to induce restoration of contractile power in cases of muscular weakness or atrophy resulting from nerve lesions or essential muscular dystrophy; and in cases of neurasthenia and the latent form of hysteria. They are also useful as a general tonic measure in cases presenting no definite disease but suffering from slackness and want of tone. It is also claimed that they exercise a favourable influence in cases of chronic gout, with or without local manifestations of the disease. The fibrillary muscular contraction excited by the current furnishes a basis for its use in the first class of cases. To this muscular contraction is probably due the inhibition of the fall in blood pressure that would otherwise result from the effect of the warm bath; and this may account to some extent for the tonic and invigorating effect experienced after the bath. The results obtained on metabolism are not sufficiently striking to justify the frequent employment of these baths in cases of chronic gout unless the slight increase in elimination of urea and uric acid which followed the constant current may be considered an indication in this direction.

The light and ozone bath.—The introduction of the factors of the inhalation of ozone and the passage of the high-frequency current differentiate this bath from the ordinary electric-light bath. The striking results obtained on the hæmoglobin value of the blood point to its use in cases requiring sweating baths, in which anæmia is present, and further tend to show that the daily breathing for a stated time of air highly charged with ozone may be a useful auxiliary measure in the treatment of intractable cases of chlorosis and secondary anæmia.

The Greville and Dowsing baths are both used for much the same class of cases and their application may be considered under the head of general to the whole body and local to various parts. Touching their general application for the cure of diseases other than those affecting the joints, much more is claimed for them than we think can be substantiated. Thus they have been advocated for the cure of phthisis, chronic bronchitis, asthma, chronic kidney disease, heart disease, anæmia, dyspepsia, obesity, chronic alcoholism, skin diseases, and others, in each of which good results are said to have been obtained by one or other system. In some of these, as for instance, chronic kidney disease, the indications are clear for their use. In others, though a few cases of each are recorded as having derived benefit, the evidence is not sufficiently strong to warrant the supersession by these baths of better known and longer tried methods. It is in the chronic general diseases of which the prominent manifestation is arthritis that they are of most service, such as gout, rheumatism, arthritis deformans, gonorrhœal rheumatism, and especially in local affections of the joints, fibrous tissues, or nerves, such as chronic arthritis (gouty, rheumatic, traumatic), sprains, lumbago, sciatica, neuritis, and neuralgia. In these conditions better results are obtained and are probably to be accounted for by the profound alteration in nutrition which results from the marked variations in blood pressure produced and from the rapid changes that take place in the volume of the blood—alterations in nutrition which are in part evidenced by the considerable changes that occur in the excretion of urea and uric acid. Whether one system

presents any real advantage over the other we are not prepared to say.

The Berthe and Vichy bath.—This is chiefly used in cases of chronic gout and rheumatism or in functional derangement of the alimentary tract. The initial lowering of blood pressure by the steam heat and its subsequent restoration after the full bath excite changes in the volume of the blood and changes in the relation of blood plasma to tissue fluid, effects which are aided by the vigorous massage administered and which result in the liberation of waste products from the tissues and their elimination from the body. The urinary constituents do not show as marked a change as has been previously found by us to result from a similar bath, the Aix douche,[6] in which there is no preliminary steam bath, and the difference is probably to be accounted for, at least in the case of urea, by the fact that some of the urea is carried off in the perspiration excited in the Berthe box.

The peat baths.—These are largely used in cases of chronic pelvic disorder of an inflammatory nature. Their action, which resembles that of a wide-spread poultice, materially aids in the absorption of effused products. They are also used for cases of chronic intractable rheumatism and gout and in local manifestation of these disorders, such as lumbago or sciatica. The results obtained by us are not conclusive enough to indicate strongly in which direction they are likely to be of service.

The thermal sulphur bath.—These baths are largely used at Harrogate in the treatment of gout, rheumatism, and functional derangements of the liver and also for their local action on the skin in cases of skin disease. In the former, as well as the latter, experience shows that they are of undoubted value, though their mode of action is by no means clear. Apart from their marked effect upon blood pressure, which has been previously shown,[7] this investigation proved nothing conclusive as to their influence on metabolism.

In conclusion, we wish to record our appreciation of the courtesy shown to us by Mr. A. H. Marshall, the chairman, and the late Mr. A. H. Davis, the manager of the Royal Baths, in affording us facilities for the use of the baths during the investigation.

A CASE OF EXTENSIVE CUTANEOUS DIPHTHERIA WITH AN EXAMINATION OF THE NERVOUS SYSTEM.

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THAT diphtheria may attack a wound and lead to death by systemic poisoning is a familiar fact to every medical practitioner. The following case, however, presents several points of interest and from its extent and pathological characters vividly recalls to mind those cases of cutaneous diphtheria which were so common during the epidemics of the early part of the nineteenth century and concerning which the physicians of that period wrote but which are now comparatively rare and almost forgotten. We have, therefore, by the courtesy of Dr. E. W. Goodall, taken the opportunity of placing it on record.

Before Bretonneau's time Chomel[1] in 1789, Starr[2] in England and Samuel Bard[3] in America in 1771 had drawn attention to a membranous affection of the skin. Bretonneau in his first memoir gives examples of this affection and demonstrates that diphtheria in whatever locality it occurs in the body has everywhere the same characters. In 1828, during the epidemics at Sologne, Trousseau and Ramon[4] collected many cases which are described with great care. According to Trousseau diphtheria never develops on the skin unless the latter is previously deprived of its epidermis or ulcerated and the lesions which he has found to be affected with diphtheria are blisters, leech-bites, cuts, herpes, cracks of the breast, excoriations of the genital organs, of the ears, of the hairy scalp, of the nose, of the anus, and different wounds. He describes a case in which the vulva and the skin of the folds of the thighs were affected and which appears to have been very similar to our own. The commonest starting-point appears to have been in a blister applied to the neck.

With regard to the pathological appearances of a wound affected with diphtheria Trousseau says that it first becomes painful, a "colourless fœtid serosity" escapes, and a thick greyish flabby membrane appears on the surface. The edges of the wound are swollen and violet-red in colour. The disease does not usually extend but remains stationary for months. When the *epidermis alone is removed* the raw surface becomes covered with a white membrane and a kind of "erysipelas" soon develops round it. On the surface of the latter the epidermis is elevated in many points by small masses of "lactescent serosity." The vesicles thus formed run together and burst, the exposed dermis being then covered with a white membrane. These new centres join to the main centre and to each other and so the disease spreads. The pellicular concretions gradually become thicker and the most exterior layers become softened, putrid, greyish-black, and fœtid. In one case he saw gangrene attack the part. The invasion generally takes place from the superposed parts towards the dependent parts, this probably being due to the irritation of the serous secretion. He has seen it commence on the hairy scalp and spread to the loins. When the disease extends rapidly the fever may be very acute but it is usually like the hectic fever accompanying suppuration. The patients died after the manner of those suffering from malignant diphtheria. Daviot[5] states that he had most commonly seen cutaneous diphtheria occur *spontaneously*, although Trousseau maintains that it is always preceded by a breach of surface.

The preceding remarks are quite sufficient without any further references to the literature to show that cutaneous diphtheria was a frequent and fatal affection during the epidemics of that period and that it was liable to be very extensive.

In the case under consideration the patient was sent to the Homerton Fever Hospital on Sept. 30th, 1903, by Mr. A. F. Cole certified to be suffering from diphtheria. Mr. Cole gave the following history of the case: "The patient, a female child, aged one and a half years, was brought to the out-patient department of the Mildmay Mission Hospital, Bethnal Green, E., on Sept. 29th, 1903. The mother stated that there was a 'sore' in the left groin which had been increasing gradually for seven days: that it had come 'by itself,' and even on careful inquiry *no history of any scratch or wound of any kind could be obtained;* her brothers and sisters were quite well. On examination there was a gangrenous patch with sinuous edges and about three by two inches in extent surrounded by an inflammatory areola about half an inch in width. It commenced in the groin where the site of ulceration was occupied by a blackish scab and was apparently spreading upwards mainly on the abdominal wall. This more recent ulceration showed what were evidently sloughing portions of skin of a dirty white colour. There was nothing to be seen approaching the appearance of a membrane and the edges gradually merged into healthy skin, but in the more central portion the loss of substance was considerable. The left labium majus was greatly swollen but no trace of ulceration could be found upon it. No glandular enlargement was observed. The child did not seem to be very ill at this time; dressings saturated with 1 in 4000 biniodide of mercury were applied and she was taken home. On seeing the child again that evening she was admitted to the children's ward. Within one hour of her admission smears and cultures from the surface of the gangrenous patch were taken. The smears revealed typical bacillus diphtheriæ and the same organism was grown in pure culture upon the serum."

[6] Bain and Edgecombe: Journal of Physiology, vol. xxiii., 1899.
[7] Edgecombe and Bain: Effect of Baths, Massage, and Exercise on Blood Pressure, THE LANCET, June 10th, 1899, p. 1552.
[1] Quoted by Trousseau, Clinique Médicale, tenth edition, book i., p. 472.
[2] Quoted by Bretonneau, First Memoir, New Sydenham Society, 1859, p. 18.
[3] Ibid.
[4] Dictionnaire de Médecine, 1835; Archives Générales de Médecine, 1830, tome xxi., p. 54], and tome xxiii., p. 393.
[5] Relation d'une Épidémie de Diphtheropathie, Gazette Médicale, 1846, p. 178.

The following is a brief *résumé* of the course of the disease obtained from the Fever Hospital notes: "On admission to the Homerton Fever Hospital the lesion was seen to be limited to the left iliac region and upper part of the thigh, extending from the upper limit of that region to a line parallel to Poupart's ligament and two inches below it. The ulceration was superficial and sinuous in outline. There were two deep ulcers in the inguinal fold and the left labium majus was swollen, red, and tense. There were no vaginal discharge and no fœtor. There were a few scattered ulcers about the size of split-peas in Scarpa's triangle below the general mass of ulceration. The child was pale; pulse regular and of good size and tension; temperature 97° F.; fauces pale and clean. 12,000 units of antitoxin were given and local treatment was applied. Cultures taken from the lesion showed the bacillus of diphtheria growing quite pure. The bacilli were mainly of the long variety. Oct. 1st: The child vomited twice during the night and several times during the day. She was therefore fed per rectum and the vomiting ceased. Oct. 4th: Vomiting again set in. The local lesion was rapidly healing. Oct. 5th: The vomiting was profuse and persistent and the urine was loaded with albumin. The wound was clean and granulating. From Oct. 5th to 18th: The child vomited persistently. Oct. 28th: The patient was very pale and losing flesh rapidly. There was no obvious palsy but the child was very limp and helpless. Oct. 30th: Face without expression. Breathing jerky and irregular. No obvious palsy. Knee-jerks not obtainable. On Nov. 1st the following note was made: 'The child is lying in an absolutely helpless state, unable to move its legs which remain in whatever position they are placed. The arms, hands, and fingers can be moved slightly. All the muscles are flaccid and wasted. The knee-jerks cannot be obtained and the superficial reflexes are absent. The child can swallow. The respirations are jerky, with sucking in of the abdomen and intercostal spaces, suggesting paralysis of the diaphragm. The pulse is 168, dropping a beat every now and then. The wound looks healthy but has not quite healed.' The child died at 10 P.M. on the same day (the forty-first day of the disease)."

Pathological examination.—A post-mortem examination was performed on the morning after death. The local lesion consisted of a patch of healthy granulation tissue about three-quarters of a square inch in extent and surrounding this was a narrow zone of thin very slightly contracting cicatricial tissue. The scarring, indeed, suggested that the lesion had been much more superficial than its appearance at the beginning had suggested. The smaller ulcers had left no scars. The body was thin and emaciated. All the vital organs appeared healthy to the naked eye.

Histological report.—The heart was fixed in Müller's fluid and stained by Marchi's method. It showed a small amount of fatty degeneration comparable in extent with that found in a case of diphtheria proving fatal at this stage of the disease. There were no increase in the connective tissue of the heart and no intermuscular infiltration. The heart failure in this case was secondary. The amount of degeneration would probably not have given rise to any symptoms of heart failure except as the result of some strain. This is the usual course of events in diphtheria, death from heart failure in the *later* stages of that disease being secondary to a general failure of the nutritive processes, to some complication, or to some strain which the weakened heart is unprepared to meet. Extensive fatty degeneration was present in the liver but in no way to be compared with the almost total degeneration of the parenchyma which occurs in many fatal cases of late vomiting in diphtheria. Beyond slight fatty degeneration of the epithelium in the tubules the kidneys were normal. The lower part of the pons, the medulla, and the cervical and lumbar enlargements of the cord were examined by Nissl's method of staining. Here and there was seen a nerve cell of the multipolar variety in a condition of swelling and chromatolysis, but these were very rare when compared with the vast majority which were normal. On the whole, each region of the central nervous system examined was regarded as practically normal. The vagi, phrenics, median, intercostal, and anterior crural nerves were examined. All these nerves were normal except the anterior crural and here there was degeneration. The degeneration was in an early stage and although quite definite was not very extensive. Perhaps not more than about 10 per cent. of the fibres showed definite changes and not more than 1 per cent. were totally degenerated. The degeneration was more or less patchy in character, for the most part occupying but a small portion of the visible fibre. The changes consisted of cloudy swelling, the fibres being irregular in outline and finely granular in appearance. Many fat globules were seen and in these cases the myelin sheaths were completely broken up. In many fibres the axis cylinders were irregular in outline, in some places swollen and in others broken across. The majority of the degenerated fibres were lying singly in the middle of bundles of normal nerve fibres.

As mentioned at the beginning of the paper this case is interesting from the point of view of the rarity of this type of the disease nowadays and important in that it might easily have been undiagnosed except for a prompt bacteriological examination. As far as we are aware this is the first case which has been examined histologically and the findings agree with those which might have been expected to occur in a case of diphtheria proving fatal at a late period of the disease. The results of the pathological examination also afford confirmation of the fact that in the later stages of diphtheria very little fatty degeneration of the heart or degeneration of the cells of the central nervous system is to be found but that degeneration of the peripheral nerves is quite likely to be met with, whereas in cases dying from acute diphtheritic toxæmia extensive fatty degeneration of the heart and acute degeneration in certain cells of the central nervous system are the rule. This question has recently been discussed by one of us (C. B.) in THE LANCET[6] and therefore will not be entered into in this paper. Whether this was a case of primary cutaneous diphtheria or a diphtheritic infection of a previous lesion must remain an open question.

TUMOUR OF THE RIGHT CAUDATE NUCLEUS AND FRONTAL LOBE.

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THE following case of a glio-sarcoma of the caudate nucleus and prefrontal lobe of the right side appears to us to be of sufficient clinical interest to be put on record, not only on account of the difficulty of arriving at a definite diagnosis but also on account of the peculiar set of signs and symptoms exhibited by the patient. The degree of difficulty in the localisation of tumours of the cerebrum varies with the site, and the difficulty is very much greater if the tumour should be situated in those parts of the brain to which the name of "silent areas" has been applied. The prefrontal lobe has generally been considered to be one of these areas. It has been pointed out by many observers that a lesion of the frontal lobe does give rise to a fairly well-defined group of symptoms. In a most interesting and instructive paper in THE LANCET of Feb. 8th, 1902, p. 363, Dr. W. Elder and Mr. A. Miles have recorded a case of tumour of the left prefrontal lobe successfully removed by operation and they have fully discussed the diagnosis and symptoms observed in their case. The perusal of this paper gave great assistance in arriving at an opinion of the true nature of the condition of our patient. The symptoms observed in lesions of the frontal lobe they consider to be produced by "an interference with inhibition, with attention, and with judgment, which are probably the highest functions of the brain, rendering man pre-eminent amongst living creatures."

The patient, a man, aged 35 years, was an engineer in charge of a steamer on the voyage from England to Calcutta. All the information obtainable was that on the way out he appeared to be very forgetful, careless regarding the performance of his duties, and that all his desires were covered by the two words "food" and "sleep." There was no history of syphilis, alcohol, or mental troubles. On the arrival of the ship in Calcutta on Feb. 20th, 1904, the patient was admitted to the General Hospital for pain in the right side of the head and fits of giddiness. He was found to have some loss

[6] THE LANCET, Feb. 4th, 1905, p. 278.

of memory, particularly with regard to recent events, and to have lost in a great measure all sense of decency and shame. While in hospital he improved to some extent and left to rejoin his ship, but was taken ill immediately again and was brought to the Medical College Hospital and admitted on April 5th, 1904.

On admission the patient, who was a strong, powerfully built man, was very dull and slept practically all the time. He could be roused easily enough but was very slow in answering questions and evidently could not keep his attention fixed on any one subject for any length of time. On being left alone he immediately went to sleep again. On being questioned as to where he was he always replied "in the General Hospital," although repeatedly informed that he was in the Medical College Hospital. Hearing was normal; there was no aphasia and cerebration appeared to be slow and deliberate. Reading and writing could not be tested, as he refused to oblige us. There was paresis of the lower part of the face on the left side and of the left arm and leg; there were no sensory symptoms. The reflexes were lost; there were no ankle clonus and no trophic disturbance. The patient could only walk a few steps and then by throwing most of the weight of the body on the right side; he was distinctly unsteady in his movements and he showed a great tendency to fall to the right when sitting up in bed or on attempting to walk. He complained of headache all the time, which was limited to the frontal region of the right side. The skull over the right frontal lobe was painful and tender on percussion and appeared to be slightly swollen. There were no real involvement of the sphincters of the rectum and bladder, no vomiting, and no optic neuritis; the bowels were constipated. He still took a marked interest in his food, though listless and apathetic to a marked degree concerning everything else. With regard to the circulatory system the heart was normal and the pulse was slow and regular and of moderate tension; there were no signs of atheroma. The temperature was 98° F. and continued normal till after the operation. The other systems were normal.

As to the progress of the case there was a steady increase in the dulness and apathy and on April 8th he passed urine and fæces in the bed, probably not from any real loss of control of the sphincters but from carelessness regarding the impropriety of doing so. On the 12th his bowels were moved with difficulty and he began to have some trouble in swallowing. By the 19th the lethargy passed into stupor and he could only be awakened with great difficulty; all desire for food also seemed to have gone. The paresis did not become any more marked and there was never any real paralysis. The tenderness and bogginess over the right frontal region increased and he always winced on percussion over it. The chief points on which we had to rely for a diagnosis were headache, giddiness, loss of memory, loss of modesty and sense of decency, slight paresis of the left lower face, arm, and leg, listlessness and apathy, slowness of pulse, with persistent normal temperature, and tenderness over the right frontal region. Speaking generally a picture such as this points to increased intracranial pressure. The diagnosis had to exclude hæmorrhage, embolism and softening, dementia and atrophy of the brain, and abscess.

A. Against hæmorrhage we had: (1) the gradual development of the symptoms; (2) the loss of memory and mental symptoms developing first; and (3) absence of any associated lesions—e.g., albuminuria, high-tension pulse, hypertrophied left heart, atheroma, &c.

B. Against softening due to embolism or thrombosis. Embolism is excluded for the same reasons as hæmorrhage and the absence of any endocarditis or septic condition still further supports its exclusion. Thrombosis may be excluded from the absence of any history of syphilis, starvation, malaria, no general paralysis of motion or sensation, and the age of the patient.

C. Dementia and gradual involution of the nervous system, beginning in the psychical centres, might have explained the case but the history of the case and the short duration of the symptoms were sufficient to exclude dementia.

D. Against abscess we had: (1) no evident source of infection—ear disease, pyæmia, &c.; (2) persistent slowness of the pulse with normal temperature; and (3) no history of injury, &c.

E. In favour of tumour we had: (1) the gradual onset and steady increase in severity of the symptoms, indicating a gradual increase in the intracranial pressure; (2) the persistent headache, slow cerebration, and lethargy; (3) the slowness of the pulse, with normal temperature; and (4) the paresis of the left side of the body. Against this view was the fact that some of the most important signs of tumour of the brain were absent, more particularly vomiting, optic neuritis, and loss of reflexes, in what was considered a lesion of the upper motor segment.

With regard to the locality we had the following localising points: (1) paresis of the left lower face, arm, and leg; (2) the peculiar mental symptoms; (3) headache chiefly confined to the right frontal region; and (4) tenderness and bogginess of the same region. The paresis pointed to an implication of the fibres passing from the Rolandic area to the internal capsule, and as the paresis was very imperfectly developed we considered that the pressure of the tumour backwards was limited. That the cortex was not involved was evidenced by the fact that there were no convulsions, no aura, and no epilepsy. The peculiar mental symptoms—loss of memory, apathy, loss of sense of shame, loss of inhibitory power—we thought to be strong evidence of the lesion being situated in the frontal lobe. All these symptoms are intimately associated with abolition of the functions of the frontal lobe and are largely due to a loss in the power of inhibition of the individual, so that the patient is reduced almost to the condition of an animal deprived of its cerebrum. These points are extremely interesting in our case, as from a perusal of the literature of the subject one would be inclined to consider the left prefrontal region of more importance than the right as far as the above functions are concerned. (At the time we took pains to make sure that the patient was right-handed.) Allan Starr, from a study of the cases recorded of this region, concludes: "The form of mental disturbance in lesions of the frontal lobe does not conform to any type of insanity. It is rather to be described as a loss of self-control and a subsequent change of character. The mind exercises a constant inhibitory influence upon all action, physical and mental, from the simple restraint on the lower reflexes, such as the sphincters, to the highest control over the complex reflexes, such as emotional impulses and their manifestation in speech and expression. This action of control involves judgment and reason—the highest mental qualities. Thus we would expect the partial destruction of the frontal lobes to be accompanied by errors of judgment and reason of a striking character; one of the first manifestations would be a loss of that self-control which is the constant accompaniment of mental action and which would be shown by an inability to fix the attention to follow a continuous train of thought or to conduct intellectual processes. It was this very symptom that was present in one-half of the cases collected. It did not occur in lesions of any other part of the brain."

The absence of vomiting in our case may be due to the fact that the tumour was situated so far forward; as the nearer the tumour is to the vomiting centre in the medulla the greater the tendency to vomit. Our patient was examined for optic neuritis on admission, before the increase in intracranial pressure was marked, which may account for its absence. On the above evidence a definite diagnosis of tumour of the frontal lobe of the right side was made and the patient was transferred to the surgical side with a view to operation. On April 21st Captain Thurston opened the skull over the area of the tenderness; further than an evident increase in the intracranial pressure nothing abnormal appeared on the outer surface of the brain. An incision was made in the cortex and a finger inserted and the brain around was gently and carefully palpated for any mass but nothing was found. Although nothing could be discovered during the operation of the nature of a tumour, the diminution of the intracranial pressure alleviated the more pressing symptoms. Consciousness returned and the patient could answer questions and he made marked use of his arms, wiping his mouth with the sheet after coughing. He still passed urine and fæces in bed. Next day there was a good deal of coughing and expectoration. He tried to undo the bandages. He vomited and the temperature rose to 101·5°. On the 24th he became unconscious; his temperature was 103·2°. He never recovered consciousness and died on the evening of the 26th.

Necropsy.—At the post-mortem examination the following was the condition of the brain. 1. The right ventricle was distended with fluid and dilated anteriorly, bulging forwards into the frontal lobe. 2. The floor of the right ventricle showed a reddish-brown tumour of the corpus striatum, projecting into the cavity of the ventricle and pushing the third ventricle over towards the left. 3. The left ventricle contained excess of cerebro-spinal fluid. Nothing else

abnormal was found. The tumour was a glio-sarcoma of the caudate nucleus, rapidly growing and projecting into the frontal lobe, pressing on and infiltrating the bundles of fibres coming from the frontal lobe to the internal capsule. The posterior part of the tumour was pressing on the internal capsule and would thus account for the motor paresis. The greatly increased amount of cerebro-spinal fluid with the accompanying increase in intracranial pressure explained the gradually increasing stupor. The several connexions of the frontal lobe with other parts of the brain would assist in explaining the mental condition of our patient. Our reason for recording this case is to add another to the list of lesions of this region already reported, where it has been possible to localise the site of the lesion before death.

TWO CASES OF TETANUS TREATED BY ANTITETANIC SERUM.

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As the serum treatment of tetanus is still on its trial I think that no apology is needed for the following brief records of two cases which have recently been under my care in the Royal City of Dublin Hospital.

CASE 1.—The patient, a male, aged 34 years, was admitted to hospital on Oct. 31st, 1904, suffering from severe burns of both hands and legs, the result of his bed taking fire from the ashes of his pipe while he was asleep. He was found by his wife unconscious in bed with the bedclothes smouldering. Both hands and wrists were severely burned, three fingers on the right and two fingers on the left hand being completely destroyed. The burns on the lower extremities were less severe and were situated chiefly around the ankles and heels. After admission the temperature rose gradually and reached 103·6° F. on the fourth evening; it fell to 100° by the seventh morning and remained between 99° and 100° for a week and the patient appeared to be doing well. The temperature rose to 101° on the fourteenth evening but came down the next morning.

On Nov. 16th—that is, the seventeenth day after the accident—the patient complained of some stiffness of his neck. During the day this increased and in the evening there were some stiffness of the jaws and difficulty in opening the mouth fully. He was removed to the observation ward and powders containing 30 grammes of chloral hydrate and one drachm of bromide of potassium were ordered to be given by the rectum every six hours. On Nov. 17th the patient had frequent spasms during the day, chiefly affecting the abdominal muscles and lasting only two or three seconds; he was given a subcutaneous injection of ten cubic centimetres of Pasteur's antitetanic serum in the morning. He lay on his back with the knees drawn up, head and neck very rigid, and teeth clenched, but was able to take fluid nourishment well. The temperature at 4 P.M. was 96·8°. He was very restless during the night and had very frequent spasms. While under observation he had 31 distinct spasmodic contractions of the abdominal muscles in two minutes; after this chloroform was administered to induce sleep. He slept only at short intervals for about four and a half hours. On the 18th the temperature was 103·4°. He had constant spasms. Ten cubic centimetres of antitetanic serum were injected into the spinal canal by lumbar puncture. The spasms became more severe and the patient died at 1 P.M., the temperature rising to 107° an hour before death and remaining at that level till the fatal termination.

CASE 2.—A youth, aged 19 years, was admitted to hospital on the evening of March 9th, 1905, complaining of stiffness of the jaws and difficulty in swallowing. Three weeks before he got a splinter of wood under the nail of his right middle finger; it was removed at once and on admission the wound was completely healed and gave no pain. On Sunday, March 5th, probably the eighteenth day after the accident, the patient first noticed the stiffness which gradually became worse and pain appeared in the neck and shoulder. The bowels had not been opened since the previous Monday. He was unable to swallow anything except liquids. On examination risus sardonicus was well marked, he was unable to open his mouth more than half an inch, his tongue could only be protruded to a very slight extent, and marked contraction of the masseters, some opisthotonos, and contraction of the abdominal muscles were present. There were no stiffness or contraction of the muscles of the extremities and no spasms. The temperature on admission was normal and remained so throughout his stay in hospital.

The patient was ordered a large simple enema which had a very good result. He was ordered powders containing one drachm of bromide of potassium and half a drachm of chloral hydrate by the rectum every six hours. On March 10th he had slept for six and a half hours during the night. He felt better except for the stiffness of the neck which had increased. Ten cubic centimetres of Pasteur's antitetanic serum were injected subcutaneously. He passed a quiet day, he had no spasms, and his neck was less stiff in the evening. In the evening one slight spasm was observed while the patient was half asleep. On the 11th he had slept well during the night and was feeling better though his neck seemed stiffer. Ten cubic centimetres of antitetanic serum were injected. He slept a good deal during the day. On the 12th he had slept all night. His neck was still very stiff. The abdominal muscles were very hard and well-marked opisthotonos was present. Ten cubic centimetres of antitetanic serum were injected. He was better able to open his mouth. On the 13th he had slept well all night. Ten cubic centimetres of antitetanic serum were injected. The patient was given some bread soaked in milk and beef-tea which he swallowed without difficulty. He was feeling much better, though the stiffness of the neck still continued and there was pain in the chest on drawing a deep breath. On the 14th he had slept all night. He had no pain in the chest, his neck was less stiff, and he was able to open his mouth better. The powders were ordered to be given every eight hours. From this time onwards the course of the case was uneventful, though the contraction of the abdominal muscles and the stiffness of the neck disappeared very slowly. On March 24th the powders were stopped and on the 31st the patient was allowed out into the grounds and was discharged on April 7th.

These two cases present a marked contrast to one another. In both the incubation period was long, in the first case 17 days and in the second case probably 18 days. In both the temperature was normal on the first appearance of the symptoms, in the second case it remained normal throughout the course of the disease; but in the first case after a preliminary fall it rose rapidly through 10·2° in 20 hours. In both cases the treatment was the same—i.e., injection of serum and the administration of large doses of bromide of potassium and choral hydrate by the rectum. In the one case death occurred within 60 hours of the onset of the first symptoms whereas the second patient recovered. In the first case the spasms were both frequent and severe, while in the second only one was observed. Case 1 may, I think, be regarded as hyperacute in spite of its long incubation period and Case 2 was certainly chronic. The only conclusion that I can draw from these two cases is that the result was due to the degree of infection and was not materially altered by the treatment.

Dublin.

Medical Societies.

PATHOLOGICAL SOCIETY OF LONDON.

Bacillus Influenzæ as a Cause of Endocarditis.—Gonococcu Endocarditis.—The Vitality of the Typhoid Bacillus in Shell-fish.

A MEETING of this society was held on April 18th, Dr. E. KLEIN, Vice-President, being in the chair.

Dr. T. J. HORDER read a paper on the Bacillus Influenzæ as a Cause of Endocarditis and dealt with two cases of influenza septicæmia in which the bacillus was cultivated from the blood. The first case was that of a man, aged 31 years, who was admitted to St. Bartholomew's Hospital in May, 1904. Blood cultures were undertaken upon four separate occasions and were positive each time. Some of the cultivations obtained consisted of very large numbers of colonies, as many as 100 per cubic centimetre of blood. The method adopted was to puncture a vein with a sterilised needle attached to a five cubic centimetre glass syringe and to inoculate broth and agar tubes immediately. The morphological and cultural

characters of the organism obtained were those of the bacillus influenzæ, as described by Pfeiffer and others. Post-mortem investigations confirmed the diagnosis which had been arrived at during life. There was a single mass of vegetation upon the wall of the left auricle which yielded a good growth of the influenza bacillus on cultivation. Sections through the endocardium also showed masses of bacilli. The second case was that of a boy, aged 13 years, who was admitted to the Great Northern Central Hospital in November, 1904. Blood cultures were undertaken twice and each time a good growth of the bacillus influenzæ was obtained. This case also was fatal. The diagnosis was again confirmed by obtaining the organism from a single large vegetation which projected into the mitral orifice. In the first case the diagnosis had been arrived at by blood culture six weeks, and in the second case five weeks, before death. In both cases a marked leucocytosis occurred. Extensive investigations were made into the cultural properties of the organism. The pathogenicity was also tested in several animals but no positive results were obtained. No other organism was demonstrable either in the blood cultures or in the hearts post mortem. Several lantern slides were shown.—Dr. W. BULLOCH said that of late years he had had considerable difficulty in recognising the influenza bacillus, whereas during the epidemic of 1892-93 he had no difficulty in doing so. He thought that the organism shown was stouter than that originally described and figured by Pfeiffer. He congratulated Dr. Horder on the manner in which he had worked out two most difficult cases.

Dr. HORDER reported the first instance of successful cultivation of the gonococcus from the blood in this country. It was accomplished in the case of a man, aged 21 years, who was admitted to St. Bartholomew's Hospital three and a half months after an attack of gonorrhœa. He was at the time of his admission suffering from malignant endocarditis. Blood cultures were made twice which yielded copious growths of the gonococcus both times. The patient died a month after the diagnosis had been established. Post mortem the gonococcus was cultivated from the vegetations upon the mitral valve. Lantern slides of the cultures, films, and sections through the endocardium were shown.

Dr. KLEIN having explained the scope of the inquiry and the methods for determining in a given oyster and other shell-fish at a given period the number of bacillus typhosus as also of bacillus coli communis with which the shell-fish had been supplied, summarised his results thus: 1. Oysters readily took up into their interior the bacillus typhosus which had been introduced into their shell or into the surrounding sea water. 2. Oysters, clean at starting, rapidly cleared themselves of the ingested bacillus typhosus if they were kept in clean sea water which was frequently changed. 3. Oysters, clean at starting, cleared themselves of the ingested bacillus typhosus to a less extent and more slowly if they were kept in a "dry" state—i.e., out of the sea water. 4. Oysters from a polluted locality cleared themselves of the ingested bacillus typhosus to a less extent and at a slower rate, even if kept in clean sea water, than oysters clean at starting. 5. Oysters from a polluted locality retained the ingested bacillus typhosus to a markedly larger extent if kept "dry"—i.e., outside the water. 6. The process of "clearing themselves" of the ingested bacillus typhosus could not be owing to the oyster merely "passing out" the ingested bacillus typhosus but must be due to a large extent to an inherent power of the oyster of *directly devitalising the microbe*. The experiments with the "dry" oysters proved this and it was also evident from the rapid rate at which this microbe disappeared from the oysters kept in clean water if compared with the very small number of the microbe (bacillus typhosus) found at the same time in the surrounding sea water. 7. Oysters which had been infected with the bacillus typhosus and which were then kept in a "dry" state till they had practically cleared themselves of the microbe, when subjected to reinfection with the bacillus typhosus appeared less capable of dealing with this microbe even if they were kept in clean sea water than the reinfected oysters which had always been kept in the water. This could be explained by the obvious supposition that oysters, by being kept for some days out of the water, were not possessed of the same degree of vitality and activity of their tissues as oysters were which had always been kept under normal conditions—i.e., in water. 8. Oysters from a polluted locality and containing a large number of bacillus coli very rapidly cleared themselves of this microbe, both those kept in as also those kept out of the water. This showed that the bacillus coli was foreign to the oyster and was rapidly destroyed by it. 9. However largely infected with the bacillus typhosus the oysters at no time presented to the eye any sign of such infection; they remained in all parts normal in aspect. This was the case not only with the infected oysters kept in sea water but also with the infected oysters kept in the "dry" state. There was only one exception—viz., an oyster derived from a polluted locality, which oyster had been for 11 days out of the water. 10. During the time of these experiments (part of September, October, and part of November) the oysters lived quite well in *sterile* sea water frequently changed. There was no alteration noticeable in the aspect of the fish; they remained plump and juicy and capable of promptly and tightly closing the shell. 11. Cockles readily embodied the bacillus typhosus present in the sea water. While the number of these latter appeared at first to diminish in the body of the cockles it soon increased to a considerable degree, for five days after the cockles had been removed from the infected water and kept in clean sand the number of bacillus typhosus exceeded three times the number initially present. Their subsequent diminution proceeded only slowly since even ten days after removal from the infected water the cockle examined still contained in its body 69,000 bacilli. 12. Mussels also readily embodied the bacillus typhosus—in fact, the analysis seemed to show that mussels did so to an extent greater than oysters or cockles. As regards the fate of the bacillus typhosus in the mussels these appeared to stand between oysters and cockles, since in mussels the bacillus typhosus underwent gradual diminution, but this diminution was incomparably slower than in oysters although it took place somewhat more quickly than in cockles. Direct experiments were made by placing clean oysters—free from bacillus coli—in sea water infected with normal human fæcal matter or with domestic sewage in which the number of bacillus coli communis was ascertained. It was found that while the oysters readily ingested the bacillus coli communis they as readily cleared themselves of this microbe if afterwards placed and kept in clean sea water; from which it followed that just as the bacillus typhosus so also the bacillus coli communis was a microbe alien to the oyster and when present in it must have been derived from the surroundings.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Exhibition of Specimens.—Labour occurring in Synostic Pelvis.—Report of Rotunda Hospital.

A MEETING of this section was held on April 7th, Professor ALFRED J. SMITH, the President, being in the chair.

Dr. H. JELLETT showed a Fallopian Tube with Calcified Nodules filling its lumen, the remains of tuberculous infection.—Dr. R. J. ROWLETTE, Mr. E. H. TWEEDY, Dr. R. D. PUREFOY, Professor E. J. MCWEENEY, and the PRESIDENT took part in the discussion, and Dr. JELLETT replied.

Professor MCWEENEY showed a specimen of Ruptured Tubal Pregnancy with Demonstration of Chorionic Villi which had been removed by Mr. A. J. M. Blayney at the Mater Misericordiæ Hospital from a woman, aged 24 years, who had been suddenly seized with acute abdominal pain and collapse. The abdomen on being opened 24 hours after the onset of symptoms was found to contain much blood. The ruptured tube was discovered and removed, whereupon the patient made an uneventful recovery. The sac was of about the size of a large hazel-nut and lay near the uterine end of the tube which was widely ruptured and contained a mass of blood clot to which some whitish shreds adhered. The fœtus was not seen. Microscopic sections showed the shreddy matter to consist of tufts of chorionic villi, some of which were inclosed in a thin epithelium-covered membrane of doubtful nature. The stroma of the villi exhibited marked metachromatism on staining with Ehrlich's hæmatoxylin. It was covered with a double layer of cubical cells (Langhans' cells) on the outside of which were scattered without any regularity large multi-nucleated masses of protoplasm (syncytia). In the intervillous spaces were groups of large mononuclear cells without intercellular substance (trophoblastic cells). The mass of blood clot contained isolated syncytia in its clefts and also large groups of

the trophoblastic elements, lying at a considerable distance from the most deeply penetrating villi. The syncytial cells had not as yet become confluent and were identical in appearance with the multi-nucleated so-called "foreign-body" giant cells found wherever intrusive matter was undergoing absorption. Professor McWeeney suggested that their function was to cause the natural structures to melt away and thus provide nourishment for the ovum prior to the establishment of vascular connexions with the mother. Their nuclei seemed to be proliferating by gemmation, not by mitosis. The mucosa of the Fallopian tube was intact save at one spot where it was replaced by a fibrinous mass. The delamination of its muscular bundles was apparently being accomplished by swarms of small mononuclear cells resembling lymphocytes. The excellent state of preservation of the structures mentioned was his chief reason for exhibiting the specimen.—Dr. PUREFOY, Dr. JELLETT, and the PRESIDENT spoke and Professor MCWEENEY replied.

Dr. JELLETT read notes on a case of Labour occurring in a Unilateral Synostic (Naegele's) Pelvis.—Dr. W. J. SMYLY, Dr. PUREFOY, and Dr. T. G. MOORHEAD spoke and Dr. JELLETT replied.

Mr. TWEEDY read the report of the Rotunda Hospital for the year 1903–04.—The discussion was postponed until the next meeting of the section.

HARVEIAN SOCIETY OF LONDON.—A clinical meeting of this society was held at the Paddington Infirmary on March 23rd, Mr. C. B. Lockwood, the President, being in the chair.—Dr. Maurice F. Squire, the medical superintendent of the infirmary, showed the following cases: 1. A case of Mitral Stenosis complicated with Complete Paralysis of the Legs terminating in Recovery. The patient was a woman, aged 40 years. On admission she suffered from marked cyanosis and dyspnœa with dilated and hypertrophied heart and presystolic murmur. She appeared to be improving when a fortnight later she was suddenly seized with cramp, loss of power, and numbness in the legs. She was very collapsed, there was incontinence of urine, and knee-jerks were absent, but there was no girdle pain. She recovered from the collapse in a few hours but her legs remained paralysed for about three weeks, when they began to recover gradually and now she was able to walk well. 2. A case of Neuro-retinitis in the Left Eye. The patient was a woman, aged 59 years, who had suffered from rheumatism seven or eight years ago. Her eyes had been weak for two years and one year ago she found that she could not see anything with the left eye. In her right eye there was now a commencing cataract. In her left eye the media were clear but the fundus showed a large irregular glistening white area in the region of the optic disc. Her heart was hypertrophied and there was a double mitral murmur. 3. A case of Myopathic Dystrophy. The patient was a man, aged 37 years, whose mother had been similarly affected. His eyes had always been prominent. He first noticed weakness in his legs ten years ago and it gradually came into his arms also. There was no sensory disturbance. He had been treated by means of electricity, strychnine, and otherwise without benefit. He said that he was able to walk a long distance but could not raise himself from the ground if he happened to fall. The muscles of the face, the shoulder, the upper arm, and the thigh were especially affected. 4. A case of Neuritis due to Lead (wrist-drop). The patient was a man, aged 33 years, and a painter. There was no history of colic. He had been addicted to alcoholic liquor and began to lose power in his hands and feet a few weeks before Christmas, 1904. There was complete paralysis of the extensors of both wrists, the supinator longus was very weak, and all reaction to electricity was lost in the affected muscles. There were no sensory changes. There was a marked blue line on the gums. Under treatment, which consisted in the use of magnesium sulphate and electricity, some power had returned in the extensors of the thumb. 5. A case of Tabes Dorsalis. The patient was a man, aged 54 years, whose illness dated from a severe attack of influenza in 1892. In June, 1895, he was bedridden and unable to walk at all. The symptoms included retention of urine, five or six "lightning pains" per diem, occasional gastric crises, rectal tenesmus, marked incoördination of the legs but not any of the arms, and absence of knee-jerk; the pupils were variable, being sometimes contracted and sometimes unequal but the Argyll-Robertson phenomenon was not present. In January, 1897, he could walk a short distance with assistance. At present he walked with two sticks. He had the Argyll-Robertson pupil and primary optic atrophy. There had been no treatment. 6. A case of Friedreich's Disease in a man, aged 38 years. There was no history of either syphilitic infection or hereditary predisposition. The illness commenced ten years ago with trembling of the limbs and difficulty in walking which had gradually increased. At present he was quite unable to stand, there were incoördination of the hands, and irregular swaying movements of the head and the arms. His speech was thick, slurred, and slow; there were nystagmoid movements of the eyes when he turned to one side; knee-jerks were absent but the plantar reflex existed. The reactions of the pupils were normal. There was no sensory disturbance, scoliosis, or pes cavus. 7. A case of Paralysis Agitans in a man, aged 61 years. The first symptom of the disease was tremulousness of the hands which was noticed in April, 1903. At present the patient had a mask-like expression of the features and a general "set" appearance of the upper part of the body. 8. A case of Firm Ankylosis of both Hip-joints. The patient was a man, aged 35 years. Both his hip-joints were operated on 18 years ago on account of "diseased bone." A tuberculous abscess near the left trochanter was evacuated in November, 1904.——A meeting was held on April 13th, Mr. C. B. Lockwood, the President, being in the chair.—Dr. Edmund Cautley read a paper on Convulsions in Children. In infancy the main predisposing causes were the incomplete development of the higher nerve centres and the possibility of hereditary influences. Alcoholism was an indirect rather than a direct cause, by leading to bad feeding, unsuitable surroundings, and neglect. Tuberculosis, syphilis, and other nutritional disorders conduced to fits by causing general debility in the child. Out of 300 cases 44 began in the first six months of life, 52 in the second six months, 76 in the second year, 44 in the third year, and 27 in the fourth. After that the age incidence varied little. Rickets was a factor by impairing nutrition and giving rise by its complications to numerous exciting causes. Enormous importance was attributed to dietetic causes and their influence was regarded as partly reflex and partly toxic. The younger the infant the more probable was it that a simple reflex intestinal irritation was present. In almost every case under six months of age the fit could be definitely traced to unsuitable food. In the second six months errors of diet were the main cause but there was often associated rickets, bronchitis, or gastro-enteritis. After the fourth year a few cases could be definitely ascribed to food, such as pork, bacon, peas, and similar indigestible foods. Dentition might be regarded as a mild exciting cause in infants who had had fits or who were strongly predisposed to them. Usually the fits did not cease with the eruption of the teeth and numerous other factors were present. The canine teeth were the ones most frequently to blame. Teething was often associated with fever and resulted in imperfect digestion of food. The fits were due to the intestinal irritation rather than directly to the teething process. Worms were regarded as of comparatively little importance but were an occasional cause by producing irritation or intestinal catarrh. Dr. Cautley then gave an outline of the course of treatment and reminded his hearers that in all cases careful watch must be kept for the development of signs of disease. It must never be forgotten that in the presence of numerous possible causes of a fit the actual exciting cause might be overlooked.—A discussion followed in which Dr. J. Taylor, Dr. Sydney P. Phillips, Dr. J. F. H. Broadbent, and Mr. E. Laming Evans took part.—Mr. H. S. Clogg then read a paper on Appendicitis in Childhood, in which he remarked on the relative infrequency of appendicitis in children, estimating that about 10 per cent. occurred before 15 years of age.—The paper was discussed by Mr. F. Jaffrey, Mr. Raymond Johnson, Mr. Peyton T. B. Beale, Mr. T. Crisp English, and the President.

HUNTERIAN SOCIETY.—A clinical meeting of this society was held on April 12th at the London Institution, Dr. F. J. Smith, the President, being in the chair.—The President showed a case of Sprue or Hill Diarrhœa in a woman, about 35 years of age, recently returned from India. The illness commenced with nocturnal diarrhœa and sickness. At first the motions were bile-stained; latterly they had become frothy and grey in colour and very offensive. They had never contained blood or slime. In India there were 40 motions a day; on the voyage there

were reduced to 20 and in England to six, whilst in hospital single days had passed without a motion; however, the volume of these motions was vast. As soon as vomiting commenced the mouth became blistered and very sore along the edge of the tongue and on the lips and cheeks. Her weight during the nine months of the illness had fallen from 8 stones 12 pounds to 4 stones 6 pounds and the wasting had continued in spite of the amelioration in her symptoms in England.—Sir Patrick Manson agreed provisionally with the diagnosis as the symptoms appeared fairly typical. He pointed out that the characteristic change in sprue was an almost total atrophy or erosion of the mucous membrane from the mouth to the anus. Secondary shrinkage of other organs such as the liver followed. No micro-organism had been certainly identified as the cause of the disease. He was inclined to regard the atrophy rather as the result of exhaustion due to long-continued over-stimulation of the alimentary glands but especially the liver by tropical residence. The prognosis was exceedingly grave and although sprue was not of the same dramatic character as plague and cholera yet with typhoid fever it produced more European deaths in tropical countries. When the destruction of glandular tissue had passed a certain point recovery was impossible. He then reviewed the symptoms which were as in the above recorded case. He laid great stress on the cleanness of the tongue when there was so much alimentary disturbance. The treatment was directed by the idea of exhaustion of the alimentary glands. The food must be the least possible in the smallest quantities and most easily digested. The patient should be placed in bed and kept warm to economise energy. Milk should then be given with a teaspoon or through a straw slowly every two hours and at first during the night. Not more than three pints should be given in the day. Nothing further should be done until increased appetite and solid fæces indicated a commencing convalescence. The milk might then be slowly increased to six pints a day and for at least six weeks nothing more should be given. When milk properly given did not agree the patients did not recover. No drugs were of any use and most were harmful. Raw strawberries, however, had in many cases a most remarkably curative effect. The prognosis was almost hopeless after 50 years of age.—Dr. M. M. Bernstein spoke highly of the extract of bilberry in the treatment of chronic diarrhœas and this could be obtained at all seasons.—Mr. H. L. Barnard referred to a case of long-continued diarrhœa cured by the daily use of preserved raspberries, currants, and blackberries.—Dr. O. K. Williamson showed a case of Chronic Swelling of the Arytenoids. The lungs were healthy and he regarded the case as a very early one of primary tuberculous laryngitis.—Dr. Bernstein showed a man, aged 25 years, with Fibrous Ankylosis of the Left Shoulder Joint of two years' duration. There was no history of trauma and in spite of the rather acute onset he regarded the case as tuberculous. The muscles moving the shoulder joint were wasted. The opinion of the meeting was against wrenching or excision as the movements of the scapula were free and good.—Dr. W. J. M. Ettles showed a case of Aneurysm of the first part of the Right Axillary Artery. The subclavian was not apparently much involved. The patient was a ship's officer and the swelling had been first noticed after he had been pinned between a bull and the side of the ship during heavy weather. Medico-legal questions had arisen as to whether the aneurysm was then produced. Dr. Ettles asked for opinions as to treatment by (1) pressure, (2) electrolysis after introducing gold wire, (3) excision, or (4) proximal ligature.—Mr. Barnard strongly recommended proximal ligature of the subclavian at the outer border of the scalenus anticus. The aneurysm itself was deep and inaccessible; the brachial plexus was in close relation; several arteries originated from this part and probably a fusiform enlargement extended up beneath the clavicle.—Dr. Stanley B. Atkinson showed sections of Bilateral Inguinal Tumours removed by Dr. Wheelton Hind from a woman, aged 37 years. The sections were apparently testicular in structure and Mr. Shattock had supported this opinion. The vagina was imperforate but otherwise the patient was strictly feminine.—Dr. J. Dundas Grant showed a patient suffering from Slight Difficulty in Swallowing for over a year with occasional regurgitation of small quantities of unchanged food several hours after its consumption. There was a small elongated swelling on the right side of the neck, close behind the hyoid bone; when this was compressed a frothy fluid could be seen by the laryngoscope, welling up in the right hyoid fossa. The radiogram taken after the swallowing of bismuth showed a dark patch corresponding to the swelling, which was, therefore, almost certainly a diverticulum of the pharynx.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on April 5th.—Dr. J. Dreschfeld showed four members (mother, two sons, and one daughter) of one family affected with Thomsen's Disease. In the mother the affection was only slightly marked; the elder of the two sons, aged 16 years, showed the symptoms well. The muscles of the forearm and hands and the muscles of the leg were chiefly affected and of the facial muscles the orbicularis palpebrarum. The younger brother (aged ten years) and the girl (aged 12 years) showed the same symptoms but in a slighter degree. Dr. Dreschfeld referred to the various groups of cases belonging to this type of disease. Besides the characteristic hereditary form described by Erb, to which most of the published cases belong, there are some cases in which only one member of the family is affected and in which the symptoms come on later in life. A third group of cases has been described by Eulenburg and others in which there is the hereditary element but in which the symptoms only appear during the cold weather and not during the hot season, and a fourth group may be distinguished in which besides the hypertrophy of the muscle and the myotonic reactions there is also noticed muscular atrophy. In many cases of the ordinary and typical Thomsen's disease examination of the muscles has shown besides the hypertrophy of muscular fibres that also some muscle fibres are markedly degenerated.—Mr. F. A. Southam mentioned a case of Pyloric Obstruction due to Fibrous Stenosis, the result of contraction of a cicatrised gastric ulcer, occurring in a male, aged 58 years. Loreta's operation (digital dilatation of the pylorus) had been performed six years previously and for about four years the symptoms were relieved. Obstructive symptoms then began to recur and about 12 months subsequently gastro-enterostomy was performed with a very satisfactory result.—Mr. Alexander Wilson read a paper upon the Treatment of Accidents from Chloroform. He pointed out that the initial symptoms of grave danger were not diminished respiration but acceleration of the respiratory movements due to anæmia of the respiratory centre resulting from failure of the circulation. For treatment he advocated the prompt application of vigorous artificial respiration, which to be successful must be begun before cessation of the respiratory movements. In cases where there is engorgement of the right side of the heart the patient should be temporarily raised into the sitting position.—Dr. W. E. Fothergill endeavoured to afford an explanation of the occurrence of both amenorrhœa and menorrhagia as symptoms of anæmia. While the ancient "plethoric" theory of menstruation had been dropped long ago it had a modern equivalent in the view that menstruation is an expression of the predominating anabolism characteristic of the female organism. On this view an anabolic surplus would exist in the healthy female from puberty to the menopause. During pregnancy this would be expended upon the fœtus, during lactation in milk, and at other times in a periodic menstrual discharge. The time of occurrence of this discharge would appear to be determined by the glandular activity of the corpus luteum. Amenorrhœa could thus be of two kinds—it could be due either to the absence of an anabolic surplus or to the absence of a normal corpus luteum. The amenorrhœa of anæmia was doubtless of the former kind, as the occurrence of pregnancy during anæmic amenorrhœa indicated the continuance of ovulation and corpus luteum formation. The occurrence of menorrhagia during, and secondary to, anæmia (as opposed to the occurrence of anæmia secondary to menorrhagia) was doubtless observed in certain cases. This was best explained by the assumption that in certain circumstances the uterine muscle together with the cardiac and other muscles are so deteriorated in anæmia that their usual control over the vascular supply of the uterine mucosa is lost. In support of this view the causation of various other forms of uterine hæmorrhage was shown to be due to muscular insufficiency.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on April 14th, Mr. R. Clement Lucas being in the chair.—Dr. C. W. Chapman read notes on a case of Hysteria in a girl, aged ten years. At first she suffered from

anorexia, excitability, and morbid affection for her parents. Gradually the excitability was replaced by listlessness, so that she hardly answered questions. Subsequently she was seen by two other physicians who diagnosed cerebral tumour. The child became bedridden with complete loss of power and sensation in the legs, emaciation, and incontinence of urine and fæces. At times she declared that she was quite blind. Dreadful screaming fits occurred daily, attracting the attention of passers-by. She was then separated from her friends, put in a hospital, and made a rapid recovery. 20 years had elapsed since without any return of the former symptoms.—Mr. R. C. Dun (Liverpool) described a case of Congenital Deformity of Both Forearms in a boy, aged five months, in a position of complete pronation. A bridge of bone extended downwards and inwards from the neck of the radius to the upper end of the shaft of the ulna. There was absolute fixation but the muscles contracted properly. He had been unable to find any record of a similar condition.—Mr. C. Batchelor (Staines) reported a case of Exophthalmic Goitre in a girl, aged three years, the daughter of healthy parents in a good position of life and without any evident cause. The earliest signs were prominence of the eyes and attacks of passion. Later, there was distinct enlargement of the thyroid and the attacks of passion became more frequent. The heart's action was accelerated. A year after the onset the exophthalmos was very marked; the pulse was between 120 and 140; there were marked carotid pulsation, breathlessness on exertion, and von Graefe's sign, but no tremors. She died from exhaustion after an attack of diarrhœa and uncontrollable vomiting at the age of six years and four months. Admirable photographs of the case were exhibited.—Dr. Edmund Cautley showed a specimen of Verrucose (Infective) Endocarditis of the Aortic Valves and Aorta from a boy, aged eight years. No other valves were affected. From the condition of the valves Dr. Cautley thought that there had been a primary congenital lesion and that the terminal infection was of recent origin. The child had been in another hospital some years before for a "weak heart." The left ventricle was hypertrophied but not dilated.—Mr. Dun showed a specimen of Congenital Stricture of the Œsophagus from a boy, aged 31 months, symptoms having begun at the age of 18 months. The obstruction was seven and a half inches from the teeth. The first symptoms were vomiting and wasting. Gastrostomy was performed at the age of 20 months. The child subsequently died from marasmus. The specimen showed a simple stricture an inch above the diaphragm.—Mr. R. H. A. Whitelocke (Oxford) read an interesting paper on Some Points in the Diagnosis and Treatment of Appendicitis in Children.—A long and good discussion took place in which Mr. Lucas, Dr. Percy G. Lewis (Folkestone), Dr. Chapman, Mr. J. P. Lockhart Mummery, and Mr. Dun took part.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society was held on April 7th, Mr. C. M. Tuke, the President, being in the chair.—Mr. J. Howell Evans showed a Cervical Auricle which he had removed from a child and by the aid of lantern slides explained the origin of these growths.—Dr. Seymour Taylor showed a case of Acromegaly, the subject being a woman, 28 years of age, who had wonderfully improved under treatment with pituitary gland extract.—Dr. A. E. Russell remarked on the tendency in some of these cases of acromegaly for the disease to undergo spontaneous arrest.—The President made a few remarks, as also did Mr. H. W. Chambers and Dr. J. B. Ball.—Dr. Leonard C. T. Dobson exhibited a case of Congenital Ataxia in a boy, aged eight and a half years. The boy was born prematurely and was delivered with forceps. He had been treated during infancy for rickets. He could not talk or attempt to walk until he was four years old. He now walks with a well-marked ataxic gait and has constant choreic movements whilst awake but these movements cease during sleep. His general health is very good and he is a bright, intelligent boy, cleanly in his habits, and has complete control over his sphincters.—Dr. H. P. Potter suggested large doses of arsenic to allay the involuntary choreic movements, with which treatment Dr. E. Arthur Saunders agreed and attributed the condition as probably due to meningeal hæmorrhage at the time of birth. He found considerable benefit derived from administration of hyoscine in increasing doses three times a day.—Dr. G. E. Shuttleworth said that a degree of inhibitory and coördinative power might be gradually developed by judicious muscular exercises, and mentioned an example of a boy under his care at the Royal Albert Asylum, Lancaster, who gradually was taught to use carving tools and eventually became a teacher of wood-carving at the asylum.—Dr. Ball showed a case of Chronic Middle-ear Suppuration with Thrombosis of the Lateral Sinus, in which, in addition to the ordinary mastoid operation, he had laid open the lateral sinus, removed a broken-down clot, and ligatured the internal jugular vein.—Mr. J. G. Pardoe and Mr. E. P. Paton made some remarks on the case to which Dr. Ball replied.—Dr. Saunders brought a case of Congenital Heart Disease before the notice of the meeting, the patient being a girl, aged 15 years. The chief point of interest in the case was the peculiar character of the murmur. This was best heard at the pulmonary base and was of a roaring character, lasting throughout both systole and diastole.—Dr. Taylor remarked how impossible it was to diagnose the exact condition of these cases of congenital heart diseases.—Dr. Saunders also showed a Mongolian Idiot, aged two years and four months.—Mr. Lunn exhibited a case of Tumour of the Tongue in a girl, aged 12 years, which was of doubtful origin.—Mr. Paton considered the case to be an example of lymphangiectasis.—Mr. Lunn also showed a case of Chronic Syphilitic Glossitis.—Dr. Russell showed two cases of Progressive Muscular Atrophy occurring in two cousins. The family history was very interesting, as, although the grandfather and grandfather's brothers were affected, the next generation escaped and the disease appeared in the grandsons.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 18th, Mr. C. F. M. Althorp, the President, being in the chair.—Dr. Mitchell read notes on a case of Cutaneous Anthrax treated without Excision with Sclavo's Anti-anthrax Serum; Recovery. Photographs and slides were shown. After briefly reviewing the history of the treatment of anthrax and the discovery of the serum by Professor Sclavo, Dr. Mitchell went on to describe the case, which was eminently suitable for the trial of the serum, the pustule being on the upper eyelid where excision was practically impossible. The chief points Dr. Mitchell wished to emphasise were (1) that no reaction was noticed after the injections; (2) that the swelling and œdema increased rather than decreased; and (3) that sloughing was not prevented. All the tissues down to the cartilage of the eyelid sloughed and the patient was left with an extreme condition of ectropion, otherwise recovery was good.—Dr. Schofield read the notes of a case of Cutaneous Anthrax (on the wrist) where the pustule was not excised. Sclavo's serum had apparently no effect and the patient died.—In the discussion which followed the President urged very strongly that the old method of excision should be carried out whenever possible.—Dr. J. H. Bell said that he had more confidence in the serum treatment than in any other, especially for cutaneous anthrax; 40 cubic centimetres should be injected to begin with and repeated in 12 hours. Internal anthrax was not so common now in Bradford as it used to be. The diagnosis of this variety was very difficult, there being no positive sign till the disease was fairly advanced. The bacilli did not appear in the blood till very late and were best found by cultivation.—Mr. W. H. Horrocks quoted cases of cutaneous anthrax which had recovered without any treatment beyond that of fomenting. Was it not possible therefore that the cases which had recovered with serum treatment might also have recovered without?—Dr. Campbell quoted a case where anthrax bacilli were found in the sputum from a case of bronchiectasis. Recovery was complete. With regard to the number of recoveries reported from Italy after the use of Sclavo's serum Dr. Campbell suggested that the disease occurred there in a milder form than in this country.—Dr. Schofield and Dr. Mitchell replied.—Mr. Horrocks showed an Ovarian Tumour with Torsion of the Pedicle and read a paper on the Advantages and Disadvantages of Some of the Substances commonly used as Sutures in Surgery. The points to be considered in the selection and preparation of a suture were as follows: (1) it must be sterile; (2) it must bear strain without breaking; (3) it must be durable till union takes place; and (4) it must not be the source of mechanical irritation. Mr. Horrocks then briefly reviewed the methods of preparation of catgut, silk, and silkworm gut, and spoke strongly in favour of catgut prepared in xylol after the method employed by Mr. A. W. Mayo Robson.—Dr. Rabagliati said that he had not found the xylol gut trustworthy and preferred it carbolised.—Dr. Wood believed that the material was of very little moment

but it must be sterile.—The President, Dr. Mitchell, and Mr. Vaughan Bateson also spoke.—Mr. Horrocks replied.

MEDICO-LEGAL SOCIETY.—A meeting of this society was held on April 11th, Sir William J. Collins, the President, being in the chair. A number of medico-legal specimens were exhibited.—The President showed: (1) the Eye of a youth which had been destroyed by the entrance of a large splinter of glass; before completing the operation for removing the globe Sir William Collins had passed his finger round the orbit and discovered a second large splinter of glass which if unnoticed might have led to a fatal issue and a charge of negligence against the surgeon; (2) the Enlarged Thyroid Gland of a man who died suddenly, apparently from asphyxia due to impaction of the thyroid gland behind the manubrium sterni.—Dr. H. Harvey Littlejohn exhibited a series of photographs taken post mortem of persons who met violent deaths, which demonstrated points of medico-legal importance.—Dr. Stanley B. Atkinson (for Dr. Wheelton Hind of Stoke-on-Trent) showed sections of Inguinal Tumours removed from a woman, aged 37 years, which proved her to be a pseudhermaphrodite cryptorchid.—Dr. F. S. Toogood showed the Bones of the Legs and the Brain of a child who died from scurvy rickets in the Lewisham Infirmary. To the layman the appearances would almost warrant a charge of ill-treatment by the attendants had not medical evidence been available.—Mr. Justice Walton then read some learned "Notes upon the Law of Evidence," in which he mentioned particularly the position of the medical witness and points of clinical jurisprudence arising in general practice. He strongly supported the recognition of assessors to aid the court in preference to the employment of medical experts; such assessors, however, would not be allowed in criminal courts, for the Bar would not relinquish the right of cross-examination.—The President suggested that a full discussion of the medico-legal aspects of the Beck case by the society was desirable.—Dr. Blake Odgers, K.C. (recorder of Winchester), discussed learnedly the doctrine of the admission of *res gestæ* as evidence.—Dr. F. J. Smith suggested that to be found concealing weak points in a case was fatal to success and counsel should be coached by medical men accordingly.—Mr. Troutbeck often found, as a coroner, that it was difficult to limit hearsay and other testimony which, by publication in the press, might prejudice the case; the inquest jury conducted an investigation, not the trial of an issue.—Dr. W. P. Herringham commented upon the vulgar prejudice against "the chicanery of the law" which meant rules of procedure which the public did not understand; these rules were comparable with medical etiquette and both codes were in the interest of the public benefit.—Sir Joseph Walton having replied fully the meeting dissolved.

PATHOLOGICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on April 12th, Professor J. Lorrain Smith being in the chair.—Professor W. St. C. Symmers (Belfast) gave a demonstration on Certain Lesions produced by the Bilharzia Hæmatobia. He commenced by showing a number of lantern slides descriptive of the male and female bilharzia, of the ova, of the miracidium, and of many of the lesions produced by the ova in the human body. An explanation was given of the fact that certain ova possessed a lateral spine while others were terminally spined. Especial attention was drawn to the germinal cells and agglomeration of cells in the miracidium. In many of these points special reference was made to the work of Dr. Looss of Cairo and indebtedness was acknowledged to this distinguished observer for most of the helminthological facts mentioned. Reference was also made to the three known species of bilharzia, Professor Symmers stating that he had recently found a number of worms in the blood of cattle and that possibly these worms were identical with the bilharzia crassa. The modes of entrance into the human body were then discussed with special reference to penetration through the unbroken skin. A description was then given of a large number of preparations which Professor Symmers had brought with him from Egypt, showing the lesions in the bladder, both early and advanced, in the prostate, ureters, bowels, uterine appendages, vagina, liver, and spleen. Numerous examples of bilharzial cirrhosis of the liver were shown and described. Particular attention was called to a dysenteric condition of the large bowel due to bilharzial infection; there were also shown various portions of the intestines in which the serous coat bore enormous fibroid thickenings loaded with bilharzial ova. Finally the relation of bilharziosis of the bladder to cancer was discussed and specimens were shown. The various points of the demonstration were illustrated with microscopic preparations.—Dr. Charles H. Melland showed specimens of Pus from a case of Bilharzia Disease.—Dr. F. Craven Moore (for Dr. D. N. Nabarro, University College, London) showed specimens of Trypanosomata (Human and Animal) from Uganda and East Africa and specimens of the Tsetse Fly (Glossina palpalis).—Professor Lorrain Smith exhibited casts of Leprosy.

CHELSEA CLINICAL SOCIETY.—A meeting of this society was held on April 18th, Dr. T. Vincent Dickinson, the President, being in the chair.—Mr. John G. Pardoe read a paper entitled "The Choice of Methods for the Radical Cure of Prostatic Enlargements," in the course of which he said that there were certain cases of benign enlargement of the prostate in which the suprapubic method of Freyer could not or should not be used. Mr. Pardoe recognised clinically two varieties of innocent enlargement of the prostate: (1) the adenomatous or pseudo-adenomatous tumours; and (2) the hard fibro-muscular collar-like enlargements. The recognition clinically of these varieties called for a methodical and careful examination of the case: (*a*) by digital examination per rectum; (*b*) by bimanual examination; (*c*) by rectal examination with an instrument in the urethra; and (*d*) by intravesical examination with the cystoscope. Several points were thus ascertained, such as the size of the gland, its consistency, its contour, the mobility or fixity of the gland as a whole, and the appearance presented by its intravesical surface. The adenomatous prostates were soft, elastic, and freely moveable. The fibro-muscular collar-like prostates were firm, slightly elastic, small, and not so mobile. Malignant prostates were hard and fixed. The first should be removed by a suprapubic enucleation. The second should be treated by a perineal prostatotomy. Carcinomatous prostates should be left alone. The reasons for these conclusions were stated at some length and illustrated by a number of specimens showing varieties of prostatic enlargement.—Dr. C. Gould May read notes of three cases of Acholia in children and discussed their nature. He thought the disease was a toxæmia of some kind. He urged the importance of examining the stools in these cases, as otherwise the nature of the illness was very likely to be missed.

Reviews and Notices of Books.

The King's Coroner: Being a Complete Collection of the Statutes relating to the Office, together with a Short History of the Same. By R. HENSLOWE WELLINGTON, M.R.C.S. Eng., L.R.C.P. Lond., of the Middle Temple and South-Eastern Circuit, Barrister-at-Law, Deputy Coroner for the City and Liberty of Westminster and the South-Western Division of London. London: William Clowes and Sons, Limited. 1905. Pp. 292.

THE historical outline of the office of coroner which Mr. Henslowe Wellington has prefixed to a collection of Acts and portions of Acts relating to the subject fills but 33 pages of his volume and is too condensed to do full justice to so interesting a subject. On the other hand, the statutes themselves, long ago repealed, which amplified or defined the numerous and important duties fulfilled by the coroner in the Middle Ages are in themselves dry reading and are not easily to be understood and co-ordinated without explanatory matter by those whose knowledge of early legal history and of early legal language is of a limited character. The compiler's work, therefore, up to the point where statutes now in force are included appears to us hardly likely to commend itself to the general reader, nor does it contain matter to which lawyers are likely to have to refer.

The latter part of the book, which sets out the Coroners Act, 1887, and other Acts of Parliament relating to the holding of inquests, with brief notes giving the names of cases decided in the High Court of Justice, is of a more practically useful character, and coroners and lawyers practising before them should find it a convenient

aid in the performance of their duties. We should have thought, however, that as coroners are numerous and as country solicitors and others interested, among whom medical men may be included, are usually not possessed of large legal libraries, the mere citation of the names of cases might well have been supplemented by more or less copious extracts from them upon any points likely to occur in practice. In the course of argument before judges the law reports themselves are part of the necessary equipment of the barrister but in the courts of inquiry held by the coroner and in the references to authority to which he finds it necessary to make such direct recourse the fountain head is not always possible and the coroner, at any rate, may frequently find it useful to have the essential part of a judgment extracted for his use. There would seem to us to be room, therefore, for a carefully compiled work of this class by a sound lawyer, with perhaps chapters not only on such subjects as the law of evidence but a few practical hints on the actual eliciting of it from witnesses and upon such cross-examination as the coroner is justified in administering in order to sift their stories where he has no legal assistance from interested parties. The coroner holds a legal inquiry of a somewhat peculiar character, differing considerably from those conducted by magistrates and by judges and although a medical man with experience as such is undoubtedly the proper person to hold the office, this in itself renders it unlikely that he will have enjoyed a legal practice as well. Perhaps some day Mr. Henslowe Wellington will amplify his work in this direction when he has gained a fuller practical knowledge of the questions which arise.

Turning to a section of the Coroners Act of 1887 of considerable importance to medical men, that, namely, under which they are summoned as witnesses at inquests after being ordered, if such be required, to hold post-mortem examinations, we find that in his present volume Mr. Henslowe Wellington has taken no notice whatever of the practice which prevails in the portion of London where he himself sits as deputy coroner of employing for the holding of post-mortem examinations a gentleman who is not "in actual practice in or near the place where the death" has happened and of retaining the same gentleman in all or in most of the cases which occur as if the institution of a permanently appointed pathologist were intended or sanctioned under the Act. We do not for a moment suggest that Mr. Henslowe Wellington should have entered into a matter of controversy with a view to discussion of it as such but we should have thought that had there been authority to justify the practice in question it would have been worth mentioning, and that as there is a case (R. v. Finlay, Irish Reports, 11 Common Law, 493) which seems to bear upon the subject it should have been mentioned. Had the notes included anything in the nature of discussion or explanation, some observations from a strictly legal point of view, or at any rate an extract from the judgment given in Dublin, might have served as a guide to coroners and as instruction to medical practitioners in other districts than that now most affected by the practice alluded to. Still, if we could have wished for greater amplitude either from the point of view of historical study or of legal information, we are far from suggesting that Mr. Henslowe Wellington has done his work badly and we would repeat the wish that some day he, or some other author, may dwell more at length upon the topics on which he has touched. The duties of the coroner have been in a sense curtailed; he is no longer "custos placitorum coronæ" and questions of "deodand" do not exercise the juries over whose deliberations he presides. Royal sturgeons may strand themselves on British territory without inquests being required, but if, with the exception of cases of fire within the City of London and of one or two other matters, there is little to demand the coroner's attention beyond the inquiries into the causes and the circumstances of death with which all are familiar under the name of inquests and those preliminary investigations which throw upon the coroner the onus of deciding whether an inquest shall be held, in this respect his labours are so enormously increased and involve such heavy responsibility that his office is of greater public importance than ever. Perhaps in the ideal work upon the coroner's office chapters by a medical practitioner of experience and by an equally experienced advocate, neither of whom need have held office as a coroner himself, might be included with advantage.

Sanitary Law and Practice: a Handbook for Students. By W. ROBERTSON, M.D. Glasg., D.P.H., and CHARLES PORTER, M.D., B.Sc. (Public Health), M.R.C.P. Edin. London: The Sanitary Publishing Company, Limited. 1905. Pp. 758. Price 10*s.* 6*d.* net.

So many books on sanitation in one or another of its aspects have been published within the last few years that it seems a somewhat hazardous task to add to their number, more especially when sanitary law is the subject dealt with. We must confess, in fact, that we opened the volume under notice with some misgivings, mainly owing to the very great difficulty of composing a readable book upon this somewhat unattractive side of preventive medicine. It was, however, easy to recognise before we had turned over many of its pages that we were dealing with a book not only of considerable merit but with one in the arrangement of which much originality and independence of thought had been displayed. The work at once arrests attention and to say this of a book upon sanitary law is to pay it a high compliment. The real merit of the volume is that not only does it combine sanitary practice with sanitary law but that it also introduces into each section pertinent matter which, while educating in law throughout, clothes somewhat dry bones with the flesh of human interest. Moreover, the method adopted of dealing in separate sections with the statutes of the United Kingdom as a whole is a distinct advantage to students and others who wish to ascertain the tendency of modern legislation and to compare certain provisions of the Public Health Act of 1875 with those of later enactments. An extract from the "Contents" will not only make this point clear but will also serve to convey a good idea of the scope of the work. For instance, to take Section XXI. which deals with the water-supply, we find:—

Water-supply, Acts relating to, in England and Wales, Ireland, London, Scotland; Duties of Health Official; Supply of Individual Houses; Shallow Wells; Analysis of Water; Large Schemes for Water-supply; Sources of Water; Hard and Soft Waters; Water Filters.

There are numerous illustrations and diagrams throughout the book and these have the effect of further lightening the forensic difficulties of the volume while materially adding to its interest and information. The book has obviously been written by those who view public health through Scotch spectacles and here and there the refraction of the glasses becomes very apparent. For example, in discussing on p. 25 the duties of the medical officer of health the authors say: "In England, Wales, Ireland and London, the medical officer of health invariably holds the supreme position and to him all the sanitary inspectors are responsible." This certainly should be the case but we are afraid that as it stands the statement is not quite accurate in its application to some of our large towns. We should have been glad, too, had the authors spoken out more fully with regard to the Scotch practice of keeping the offices of the medical officer of health and the sanitary inspector quite separate. Many readers of this book will be also somewhat puzzled to discover that the registration of births, deaths, and marriages is one of the powers and

duties of the English Local Government Board but the authors are quite correct technically in attributing these powers to that Board as the Registrar-General addresses his annual reports to the President of the Local Government Board. We should, however, advise the student who may be a candidate for the D.P.H. to amplify this point somewhat, otherwise his examiners might not be sufficiently well up in the inter-relations of State departments to credit him with his knowledge.

On p. 28 the remark is made that "on no account must the M.O.H. visit houses where infectious diseases exist without the previous assent of the visiting medical man." We think that the authors must have intended to refer to *patients* instead of *houses*. Certainly patients should not be thus visited, but it would be contrary to the best interests of public health were the medical officer of health restricted in this fashion in regard to houses when inquiring into the cause of an outbreak of infectious disease. We are sorry, too, that we are not altogether in agreement with the sentiment that "there is little chance of any person obtaining an appointment who does not hold a sanitary inspector's certificate." Unfortunately, in some of the rural districts of England almost anyone who can supervise the highways is regarded as suitable for an inspector of nuisances. On p. 424 has not the Public Health (Water) Act, 1878, fallen into the wrong group? But notwithstanding these criticisms we can recommend the book as one which will prove of value both to the medical officer of health and to the student preparing for a diploma. Both will find, perhaps for the first time, that they can derive interest from the study of sanitary law and if the little defects to which we have referred are remedied and the volume is kept up to date it should certainly occupy a high place in the literature of public health.

The Practice of Obstetrics. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College. With 1264 illustrations, including five coloured plates and 38 figures printed in colours. Second edition. London: Rebman, Limited. 1904. Pp. 1153. Price 30*s*.

THE fact that only four months had elapsed since the appearance of the first edition of Dr. Clifton Edgar's text-book rendered a complete revision of the work unnecessary. A good deal has, however, been done in the correction of the minor errors which occurred in the first edition and some changes have been made in the arrangement of the various sections. The chapter on the Toxæmia of Pregnancy has been very largely rewritten and added to and the author has grouped under this heading nausea and vomiting of pregnancy, icterus, convulsions, and eclampsia. He believes that the toxæmia of pregnancy will assume even a greater importance in the future than it does at the present time and he defines it as a condition of the blood and metabolism arising from the hepatic insufficiency to which the pregnant woman is liable. Herz's theory of the presence of functional paralysis of the liver in such cases and the work done by Professor J. Ewing upon the same subject are considered in some detail and the author devotes a considerable amount of space both to the trivial and the more serious ailments which he considers owe their origin to this condition. Two new coloured drawings have been added to illustrate this section, one representing the microscopic appearances of the liver in a case of toxæmia of pregnancy and the second showing fatty degeneration and necrosis of the same organ from a case of pernicious vomiting of pregnancy. The author has found it necessary to restate his opinion regarding the indications for the performance of embryotomy and Cæsarean section, which in the first edition were apparently misunderstood. He considers that embryotomy is indicated to-day in but two conditions—first, in all instances where the fœtus is dead and its delivery unmutilated would increase the danger to the mother; secondly, in obstructed labour due to the presence of a monster; and in exceptional cases in which the mother's condition from hæmorrhage, repeated attempts to deliver, sepsis, or shock is such as to render embryotomy a safer means of delivery than abdominal section.

Transactions of the Clinical Society of London. Vol. XXXVII. London: Longmans, Green, and Co. 1904. Pp. 273.

THIS volume consists of 29 communications relating to cases of unusual interest and of brief descriptions of 46 clinical cases exhibited before the society. It is illustrated with 11 plates and there are 15 figures in the text. Many of the communications afford interesting and instructive reading, since they deal with conditions of which the importance has only recently been recognised, and in many such instances the authors have appended bibliographies which cannot fail to be serviceable to other workers in the same field. The first paper, on Erosive Gastric Ulceration with Severe Hæmatemesis, is extremely suggestive and in conjunction with the few cases which have been previously recorded it will probably go far towards modifying current views of the frequency of gastric ulcer as the immediate cause of hæmatemesis. Cases of hæmorrhagic pancreatitis and of myositis fibrosa are also recorded, while the importance attached to examinations of the blood is shown by numerous communications relating to pernicious anæmia, leucocythæmia, and chronic polycythæmia. Congenital narrowness of the pyloric orifice as a cause of chronic gastric disease in the adult is illustrated by notes of seven cases successfully treated by operation. Two examples of pneumococcal peritonitis are described, one in an adult and the other in a child. Most of the plates and figures are clear and serviceable, though in some instances a few references in the text or a short description would have been very welcome. The volume shows that the Clinical Society is worthily maintaining the traditions of the past and that its present work is likely to have an honourable place in the future.

Orthmann's Handbook of Gynæcological Pathology. Translated by C. HUBERT ROBERTS, M.D. Lond., F.R.C.S. Eng., M.R.C.P. Lond., assisted by MAX. L. TRECHMANN, F.R.C.S. Eng., M.B., C.M. Edin. London: John Bale, Limited. 1904. Pp. 127. Price 5*s*. net.

Orthmann's handbook is such a useful work that Dr. Roberts has been well advised in undertaking a translation of it, more especially as it forms a fitting appendix to his own work on Pathology in which microscopic details, to which this little book is chiefly devoted, are not considered to any great extent. Microscopical diagnosis is of great importance in the treatment of gynæcological cases and it is every day becoming of more importance. As at the present time very few, if any, of the examining boards examine candidates in their knowledge of the minute anatomy of such cases the student does not consider the matter one of much interest, nor is much attention devoted to it in the majority of the text-books dealing with this subject. No such work as the present has hitherto been available for the use of students and we hope now that they have so clear and complete a book at hand that they will devote some of their time to acquiring a knowledge of the histological anatomy of, at any rate, the commoner diseases of women.

The book is divided into two parts: the first deals with the most important and modern methods of technique, which are shortly described, while in the second, or diagnostic, part the author describes the pathology of the female sexual organs. The more uncommon diseases are only briefly dealt with or are altogether omitted, whilst those

more frequently met with and which are of especial importance in differential diagnosis are described at length. A short macroscopical sketch in each case precedes the microscopical description. The work of the translators has been carefully and well carried out and the book in its English form is very useful and will no doubt meet with the approval of those for whom it is intended. The illustrations are numerous and well chosen and reproduced.

Transactions of the Association of American Physicians. Nineteenth Session, held at Washington, May, 1904. Philadelphia: Printed for the Association. 1904. Pp. xxiv.-560.

THE prefatory pages show that this association has for its object the advancement of scientific and practical medicine and that an annual meeting is held in the city of Washington for the reading and the discussion of original communications relating to medicine and pathology. From the brief minutes it appears that 22 communications were read and the majority were discussed at three meetings, each of which lasted a little over three hours, while 13 were read by title and are included in this volume. An interesting case of polyuria in typhoid fever was described and led to discussion, while venous thrombosis occurring in the course of typhoid fever formed the subject of a careful analysis of 42 cases which afford a satisfactory basis for some valuable conclusions; this is illustrated by an admirable reproduction of a photograph which, unfortunately, is incorrectly described. The high-tension pulse in nephritis is once more discussed and it is suggested that deficient formation rather than deficient elimination of urea may lead to stimulation of the vaso-constrictor nerves. An analysis of 90 cases of poisoning by illuminating gas shows high and persistent leucocytosis, the infrequency of pneumonia, and the good results of combined venesection and saline infusion. Among other papers of interest may be mentioned the following: Clinical Studies in Arterio-Sclerosis, Diabetes Insipidus, a Case of Prolonged Male Hysteria, Types of Splenic Anæmia or Splenomegaly, and the Relation of Cells with Eosinophile Granulations to Bacterial Infection. The illustrations as a rule are good and clear.

LIBRARY TABLE.

A Manual of Practical Medical Electricity, the Roentgen Rays, Finsen Light, Radium and its Radiations, and High-Frequency Currents. By DAWSON F. D. TURNER, M.D. Edin., &c., Medical Officer in Charge of the Electrical Department of the Royal Infirmary, Edinburgh. Fourth edition. With 200 illustrations. London: Baillière, Tindall, and Cox. 1904. Demy 8vo, pp. xxiii.-435. Price 10*s.* 6*d.* net.—We are glad to welcome a new edition of Dr. Dawson Turner's well-known work. As the title shows, the author has brought his account of the subject well up to date. The great advances which have been made during recent years in the applications of electricity to medical work render the task of dealing with the subject adequately in a single volume a difficult one. The author, however, has succeeded in giving a practical account of the subject which cannot fail to be useful to all students and practitioners who are interested in electro-therapeutics and the new edition forms an excellent introduction to the study of a branch of medicine which is rapidly becoming highly important in many distinct fields of application.

Intemperance. By HENRY HORACE PEREIRA, Bishop of Croydon. London: Longmans, Green, and Co. 1905. Pp. 173. Price 2*s.* 6*d.* net.—A certain degree of uneasiness is inseparable from the perusal of any book upon this subject. This is not due to any fear of disagreement with the author, since the medical profession has abundant opportunities of witnessing the physical and the social results of intemperance, but the disquiet arises from the dread lest the author's conviction should lead him to overstep the limits of discretion. The subject of alcoholism so frequently leads to intemperate language that in a publication like the one before us we instinctively fear that much harm may be done unwittingly by violent denunciations. It is therefore the more satisfactory to be able to state that this new volume of the series of handbooks for the clergy is characterised by restraint rather than by vehemence. The chapter devoted to the medical aspect of intemperance is not marked by much research; the case might easily have been represented in greater detail and in more convincing form. It is needless here to criticise this book at length since it deals largely with social problems that lie outside our sphere. Still it is distinctly likely to be serviceable to all who have opportunities of influencing directly or indirectly the spread or the arrest of intemperance. The chapter on the Causes of Intemperance is written sympathetically, the author giving the first place to two non-preventable causes—our cold, bleak, and changeable climate, and our past history; and he rightly says that it will require generations of patient work to blot out the effect of the evil habits of the past. Of the preventable causes he mentions the housing of the people in our great towns, the temptations offered to them by the number of public houses, the monotony of their mode of life and occupation, and the generally prevailing ignorance as to the nature and properties and danger of alcohol. For its common sense and moderation this book merits very high praise. It is written for the clergy and we hope that those of them to whom this remark may apply, for they are by no means few, will imitate the absence of hysterical heroics when they feel called upon to give public utterance of their views. Sympathy, example, and reason will effect more good than can be attained by emotional denunciations.

JOURNALS AND MAGAZINES.

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., F.R.S., D. J. CUNNINGHAM, F.R.S., G. S. HUNTINGTON, M.D., A. MACALISTER, F.R.S., and J. G. M'KENDRICK, F.R.S. Vol. XXXIX., Part 2. April, 1905. With plates and figures in the text. London: Charles Griffin and Co. Annual subscription for four parts 21*s.*, post free.—The articles contained in this number are: 1. The Nature of the Mammalian Diaphragm and Pleural Cavities, by Arthur Keith, M.D. Aberd. The author contrasts the arrangement of these parts in fishes and amphibians, in birds, and in mammals, and shows how in the first of these groups the lungs are altogether contained in the general body cavity, in the second they have become partly extruded, the hinder portion remaining as an air sac, and in the third are altogether external to the body cavity. The diaphragm is a part of the body wall which has been depressed within the body cavity by the extra-abdominal development of the lungs. The analogy between these relations and those of the testis are dwelt upon. A remarkable statement is made, founded on the observations of Dally recorded in our pages (June 27th, 1903, p. 1800) and subversive of a hitherto fundamental doctrine of physiology, to the effect that the curvature of the diaphragm remains practically unaltered during inspiration. The diaphragm is a muscle which compresses the abdominal contents and maintains the portal and hepatic circulation. It arises in the form of dorsal and ventral bands of musculature acting on the roots of the lungs. This article is an important one and is illustrated by many woodcuts. 2. Dissociation in Certain Vital Phenomena, by Anderson G. M'Kendrick, M.B. Glasg., Captain I.M.S. 3. Observations on the Lumbar Arteries, by Alfred H. Young, M.B. Edin., F.R.C.S. Eng., Professor of Anatomy, Victoria University,

Manchester, with six woodcuts in the text. 4. The Small or Superficial Thyro-arytenoideus Muscle, by B. B. Seymour Sewell, B.A., of Christ's College, Cambridge, with four diagrams in the text. 5. The Myology of the Hind Limb of the Marsupial Mole (Notoryctes Typhlops), by Peter Thompson, M.D. Vict., and W. T. Hillier, M.R.C.S. Eng., with two plates. 6. The Development of the Retina in Amphibia and Embryological and Cytological Study, by John Cameron, M.D. Edin., D.Sc., with three plates. 7. Anatomical Notes upon the Membranous Labyrinth of Man and of the Seal, by Albert A. Gray, M.D. Glasg. The number contains also obituary notices of Professor Ambrose Birmingham, of the Catholic University Medical School in Dublin, who taught anatomy, and of George Bond Howes, D.Sc., late secretary of the Linnæan Society and one of the founders of the British Anatomical Society, the proceedings of which are appended.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

"TABLOID" FERRIC CHLORIDE AND ARSENIC.
(BURROUGHS WELLCOME AND CO., SNOW-HILL BUILDINGS, LONDON, E.C.)

IRON and arsenic are an admittedly valuable combination, the former increasing the amount of hæmoglobin in the corpuscle and the latter increasing the number of red blood cells in anæmic conditions. The combination may be conveniently and satisfactorily prescribed in tabloid form. The tabloid of ferric chloride and arsenic contains iron equal to ten minims of the tincture of the perchloride and $\frac{1}{60}$th of a grain of arsenious acid.

MARTELL'S ONE STAR BRANDY.
(MATTHEW CLARK AND SONS, 6 AND 7, GREAT TOWER-STREET, LONDON, E.C.)

The analysis of this brandy was as follows: alcohol, by weight 42·05 per cent., by volume 49·55 per cent., equal to proof spirit 86·84 per cent.; and extractives, 0·73 per cent. The secondary products given in grammes per hectolitre of absolute alcohol were as follows: acidity reckoned as acetic acid, 84·00; aldehyde, 16·60; furfural, 2·60; ethers reckoned as ethyl acetate, 140·00; and higher alcohols, 100·00. Total secondary products, 343·20. These results are characteristic of a genuine Cognac brandy, that is of a pure grape spirit distilled in the simplest form of still. The indications are that there is a difference of quality between one and three star brandy, but both are genuine grape spirit containing the peculiar characteristics of potstill brandy. An analysis of a sample of one star brandy, purchased in the open market, gave the following results as regards secondary products in grammes per hectolitre of spirit. Acidity reckoned as acetic acid, 74·00; aldehyde, 13·00; furfural, 2·50; ethers reckoned as ethyl acetate, 118·00; and higher alcohols, 100·00. Total secondary products, 307·50. These results again indicate a genuine brandy that is a spirit derived entirely from grape wine in the simplest form of still. The interpretation of results in both cases is thus practically the same.

"NURSING OXO."
(LIEBIG'S EXTRACT OF MEAT CO., LIMITED, 4, LLOYD'S-AVENUE, LONDON, E.C.)

This preparation differs in a very important dietetic respect from ordinary extracts of meat since it contains not only extractives but peptone and other proteids also which are of direct nutritive value. Our analysis gave the following results: moisture, 23·01 per cent.; mineral matter, 13·96 per cent.; extractives, 27·25 per cent.; fat, 0·22 per cent.; soluble proteids, 15·23 per cent.; and gelatin and insoluble proteids, 20·44 per cent. The preparation possesses, therefore, both reparative and stimulating properties and accordingly is valuable when a rapid restorative and nutrient is indicated.

PIONEER MILK SUGAR.
(THE PIONEER MILK SUGAR CO., 24, MINORIES, LONDON, E.C.)

Scarcely anything more need be said about this product than that it is accurately described as pure milk sugar. By direct analysis we obtained the figure of 99·70 per cent. as representing the amount of milk sugar present. The difference between that figure and 100 per cent. is accounted for by the presence of only 0·30 per cent. of moisture. The preparation is, of course, excellently adapted for adding to diluted cows' milk in order to approximate the proportion of milk sugar present to that contained in human milk. We think, however, that the preparation of a milk (showing the composition of human milk) from cows' milk is best conducted by leaving the cream to rise, pouring off part of the fat-free fluid, and then making up with milk sugar and water. The alternative method of merely adding water, milk sugar, and skimmed cream to cows' milk is not so satisfactory, nor does the composition of the product obtained by this method resemble so closely that of human milk. In any case the use of milk sugar of the purity of the specimen examined is very desirable.

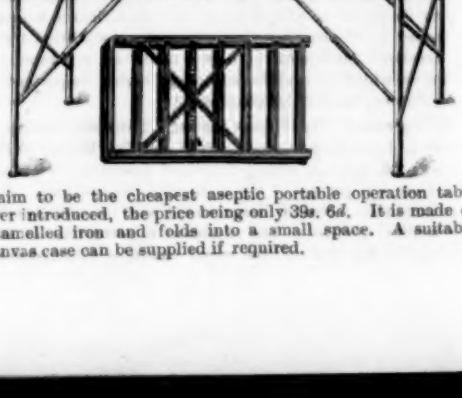
VARIOUS JAMS.
(THE CROOME ESTATE JAM CO., LIMITED, PERSHORE STATION, WORCESTERSHIRE.)

We have received various specimens of jam manufactured from fruit grown on the estate of the Earl of Coventry. The jams give evidence of care in preparation and of the use of picked fruit and good sugar. On analysis we could find no indications at all of the use of substitutes, such as glucose syrup, and, moreover, we failed to obtain any evidence of the addition of chemical preservatives. We found small and quite negligible traces of copper in one or two samples. On the whole, however, we can take no exception to the quality and purity of these jams. They are well prepared, keep well, and the characteristic flavour of the fruit is retained.

New Inventions.

A PORTABLE OPERATION TABLE.

THE accompanying illustration gives two views of a portable operation table made by Messrs. Arnold and Sons of West Smithfield, London, E.C., who have for some time past been experimenting with a view to combining the various properties requisite in such a table. This they



claim to be the cheapest aseptic portable operation table ever introduced, the price being only 39s. 6d. It is made of enamelled iron and folds into a small space. A suitable canvas case can be supplied if required.

THE LANCET.

LONDON: SATURDAY, APRIL 29, 1905.

The Study of Tuberculosis.

INVESTIGATIONS as to the causes and the treatment of tuberculosis are being vigorously carried out in different quarters of the globe. Some of the inquiries are being made by individual observers and others under the auspices of special institutions. Amongst the latter, one of the more recently formed is the Henry Phipps Institute in Philadelphia. The first annual report has just been issued and contains a brief account of the work of the first year and a reprint of the lectures delivered in connexion with the institute during that period. As its name implies, this institute was founded by Mr. HENRY PHIPPS who likewise maintains it. Its purposes as set forth in its charter are: "The study of the cause, treatment, and prevention of tuberculosis and the dissemination of knowledge on these subjects; the treatment and the cure of consumptives. The benefits shall be administered without regard to race, creed, or colour." An interesting description is given of the buildings which constitute the hospital and laboratories and the magnitude of the first year's work is in a measure indicated by the records of cases which in bound form consist of ten octavo volumes of about 1000 pages each. These records are stated to contain a vast number of scientific data and will form the basis of future communications. Some of the data are summarised in this report and present many features of clinical interest. For instance, it has been held that certain diseases markedly predispose to tuberculosis, more especially typhoid fever, pneumonia, and pleurisy, and the statistics of the patients treated at the institute during the year show that more than one-half of the cases were preceded by one or the other of these diseases, a history of pleurisy being by far the most common. These considerations are not without significance when examining applicants for life assurance.

Amongst the lectures delivered under the auspices of the institute a particularly interesting one is that by Dr. E. L. TRUDEAU on the History of the Tuberculosis Work at Saranac Lake, N.Y. An almost pathetic account is given of the difficulties which Dr. TRUDEAU experienced in establishing the Adirondack Cottage Sanatorium. As difficulties arose, however, they were gradually overcome, until to-day a small village consisting of 22 buildings entirely free from any financial encumbrance has grown up about the little one-room cottage which stands as a reminder of the institution's humble beginning. The results of the treatment adopted at the sanatorium will be read with interest; briefly epitomised they are as follows. Of 1500 cases discharged over a period of from two to 17 years 1066 could be traced and their further history recorded. Of these 46·7 per cent. were still living, 31 per cent. were stated to be "well," in 6·5 per cent. the disease was "still arrested," 4 per cent. had relapsed, 5·2 per cent. were "chronic invalids," and 53·3 per cent. were dead. These figures may at first sight appear discouraging but they include the results of cases admitted in all stages of pulmonary tuberculosis. On more minute investigation it was found that 258 patients had been discharged who on admission were in the incipient stage of the disease and of these 66 per cent. were included under the heading of "well at present." Of the 563 advanced cases 28 per cent. were "well" and of the far advanced cases only 2·5 per cent. remained in that condition. These statistics speak well for the success of sanatorium treatment in the early stage of the disease and corroborate the opinion held by nearly all observers that an early diagnosis of pulmonary tuberculosis is of the utmost importance if any real hope of permanent arrest is to be entertained. Another valuable influence which is engendered by sanatorium treatment is also rightly laid stress upon—namely, its educational value. Dr. TRUDEAU very truly observes that the hundreds of patients discharged during the past 20 years have been so many missionaries who have scattered over the land, imparting to others the simple but all-important knowledge as to protective measures and hygienic modes of life which they themselves have been so practically taught in the institution. In addition, by affording a scientific demonstration that a fair proportion of tuberculous patients can be cured and restored to lives of usefulness, the Adirondack Sanatorium has had an influence in bringing about a new attitude of hopefulness towards the disease which has inspired the building of similar institutions. We quote a sentence of Dr. TRUDEAU'S lecture which sums up in a few plain words the present position of sanatorium treatment, although perhaps the first portion may not meet with general acceptance. "Over the doors of the wards and hospitals for consumptives 25 years ago might well have been written these words: 'All hope abandon ye who enter here,' while to-day, in the light of new knowledge, we may justly place at the entrance of the modern sanatorium the more hopeful inscription, 'Cure sometimes, relieve often, comfort always.'"

Another lecture of considerable importance, although we can only briefly notice it here, is one on the specific therapy of tuberculosis and vaccination against the disease by Dr. EDOARDO MARAGLIANO. This observer has for more than 15 years been carefully and patiently pursuing his investigations; he now maintains that it is possible to produce a specific therapy for tuberculosis and also that it is possible to immunise the animal organism against tuberculosis, as is done in other infectious diseases; also that there is good reason to hope for an antituberculous vaccination for man. The details of his investigations form interesting reading and the effect of his serum on patients suffering from tuberculosis merits more extended trial. The "incorporators" of the Henry Phipps Institute may be warmly congratulated on their first annual report. It is an admirable record of work done and work attempted and the investigations now being carried on under the auspices of the institution promise to add considerably to our knowledge of the prevention and the treatment of tuberculosis.

Public Health in the Transvaal.

THE immediate and direct results of war are unfortunately disastrous to the public health, war being, in fact, the absolute antithesis of preventive medicine. It seems, indeed, little other than a farce to concern ourselves with what is largely the perpetuation of the unfit at one moment while at another every effort is being made to destroy the flower of two contending nations. Were it possible by means of some international understanding to settle disputes, not otherwise to be arranged, by pitting the unfit of the two opposing nations against one another war from a physical standpoint might prove a powerful and useful instrument for the promotion of the public health! As things stand, the premiss being impossible, the effect of war, as pointed out by MALTHUS many years ago, is to take away from the country the physically, and in large part also the morally, fit and to leave behind the unfit to perpetuate their species. This is, of course, more particularly the case when wars drag on for long periods. But the indirect effects of war may be far otherwise. The awakening of a nation has not infrequently dated from a war which has shown on the one side a nation's strength and on the other a nation's weakness. Then the blessings of peace follow war and the history of preventive medicine begins to be told. When in the future the historian sits down to record the progress of preventive medicine throughout the world the record will consist very largely of an account of the diffusion of English sanitation and ideas through the instrumentality of her Crown and self-governing colonies. Other nations, however, will also justly claim their share. For instance, the story of the battle fought by the Americans in Havana against, not the Spaniards but, the stegomyia fasciata, the bearer of yellow fever, is an excellent example of hygienic progress made immediately after war.

To turn from generalities to the concrete case of the Transvaal we gather from Dr. GEORGE TURNER'S interesting annual report for the year ending June 30th, 1904, what is actually taking place in one of our most recently acquired possessions. Unfortunately, as regards statistics Dr. TURNER finds himself badly circumstanced. He is required to present his annual report at a date when the statistics for the period to which it relates are not available and we trust that his appeal for a better arrangement will be duly heeded. So far as can be ascertained the population of the Transvaal is 1,268,716, this number being made up of 299,327 whites and 969,389 coloured, the death-rate among the whole population for the year under notice having been, according to the figures, only 10 per 1000. But the untrustworthiness of these rates may be gauged from the fact that the recorded death-rate among the coloured population was only 9·5 per 1000, that of the coloured females only reaching 3 per 1000. Obviously, as the writer of the report remarks, there must have been "serious errors in registration." With figures such as these it is impossible to place much reliance upon the statement that the fatality rate of enteric fever among the white patients was 15·9 per cent. while that among the coloured patients was no less than 68·2 per cent. Probably from 25 to 50 per cent. of the cases have not been reported. As regards the etiology of this disease we have heard so much of dust-borne and fly-borne enteric fever in South Africa that it is interesting to find that Dr. TURNER attributes to neither of these factors any material influence in promoting its spread, his scepticism being largely based upon the fact that the prevalence of dust and flies does not coincide with the maximum prevalence of enteric fever. In reference to flies, however, he is causing further observations to be made, and in view of the general acceptance of the theory that these insects are responsible for much diffusion of enteric fever, these observations will be gratefully received.

The figures as regards the fatality rate of dysentery among the white and the coloured patients respectively are as remarkable as those of enteric fever, the rate of the former being 16·3 per cent. and that of the latter being 78·7 per cent. In respect to vaccination we learn that 71,726 tubes of calf lymph were distributed gratuitously during the year, but unfortunately only a very few of the vaccinated returned for inspection. Compulsory vaccination and revaccination are, Dr. TURNER thinks, called for in the Transvaal. The statements concerning the Pretoria Leper Asylum are not very pleasant reading. A considerable proportion of the lepers succeeded in effecting their escape and the compounds had consequently to be fenced in. It has been suggested that the coloured lepers should wear a distinctive dress and that dogs should be employed to track those who escape, but with all our concern for the healthy we cannot read of such a way of enforcing segregation without repugnance. As regards phthisis we are glad to find that the medical officer of health of the borough of Durban, Natal, points out in his current annual report that although pulmonary tuberculosis is communicable it is not so in the same way as is scarlet fever or small-pox and that infection is only possible when certain simple precautions are not observed. We wish that every medical officer of health would point out this distinction, for since the infectivity of pulmonary tuberculosis, up to a certain point, has been realised, the over-anxiety of the public is as marked as the previous carelessness was wont to be.

Dr. TURNER'S report embraces numerous others and that by Mr. C. L. SANSOM, the medical officer of health of Witwatersrand, is of exceptional interest at the present moment. He reports that the most serious disease in this district is pneumonia, more particularly among the natives working underground. Indeed, he attributes to the pneumococcus a death-rate among the native miners of 14·8 per 1000 out of a total death-rate among them of 40·7 per 1000. This peculiar susceptibility to the pneumococcus is attributed by Mr. SANSOM to the defective air space in the compounds and to the windowless rooms into which no sunlight enters. He remarks that "the native working underground for the greater part of the day in vitiated atmosphere, returning at night to sleep in another atmosphere which is not, and cannot be, as pure as it should be, is obviously rendered liable to fall a prey to an organism like the pneumococcus." We are glad, however, to learn that during the past year material improvements have been made, although a death-rate of 40·7 per 1000 among a population of a sex and an age distribution suitable to work in mines requires a good deal of explanation. Mr. SANSOM appeals for some sort of standard

TO ILLUSTRATE DR. LANE JOYNT'S PAPER ON PRESSURE STASIS.

in the compound and he points out that although he may effect improvement in one compound the circumstances in the adjoining compound, where administration may not be so intelligent, will remain *in statu quo*. Apparently this remarkably high death-rate is to be attributed in part to the fact that many of the natives are in a poor state of health when they first start working. Scurvy is, Mr. SANSOM alleges, rife among them, and it is for this reason that they become an easy prey to the pneumococcus, and he thinks that a greater effort should be made to impart variety to the diet of the miners with a view to diminish the prevailing scorbutic condition. Mr. SANSOM seems to us to sum up the situation fairly when he says: "Underground labour can never be classed as a 'healthy trade,' and death-rate and sickness-rate will always be higher amongst underground workers than amongst those employed elsewhere. I am sure more generous diet, elimination of weaklings, and improvements in housing will have a very marked effect in the future, but I am certain that constant surveillance is required and housing, clothing, general care, and especially the character and quality of the food supplied, should be constantly watched by Government officials, because the native mine worker is living here under special conditions sanctioned by Government."

Appeals to Charity.

EXCEPTIONAL conditions may demand exceptional treatment and yet every method of treatment should be capable of explanation and of justification. By an unfortunate coincidence many of the large hospitals in London are at the present moment making appeals to the charitable public. These appeals are, we have no doubt whatever, in every case fully warranted. It is true that the requisite sums appear to be enormous, but it is also true that new buildings cannot be provided without considerable outlay and that those who contribute desire that all modern improvements should be utilised, and modern improvements as interpreted by the builders of hospitals are very costly. The annual contributions of the charitable show very slight variations, however out of the common the stimuli to generosity may be. Hence, it is evident that when several building funds are started almost simultaneously the chances of success are diminished. The public appeals partake of the nature of competition and business methods are likely to make an undesirable appearance. Happily, it is not generally considered necessary for the members of the staff of the hospitals to be responsible for the collection of the funds to meet current expenses or for the methods employed to attract subscriptions. Every hospital has a board of laymen who have charge of business matters and these boards generally give time and thought to such questions while the medical staff carry on the professional work without being called upon to inquire in any detailed manner into the means adopted to secure subscriptions. But this detachment may be followed by a rude awakening. For example, in the anxiety to capture subscriptions a lay committee might be tempted to resort to methods of advertisement which offend every principle of good taste or to offer commissions upon the receipts which might seriously check the liberality of constant subscribers. The cheerful giver should not be perplexed by thoughts of percentages or by any misgiving as to the way in which his donation may be expended and these things have happened before now when the advertisements of charities have been ill-managed.

Quite recently a series of articles has been appearing in the advertisement columns of the *Times* with a prefatory announcement that these notes "were prepared by a member of the advertising staff" and that "the information supplied has been verified by independent investigation." These notes are marked "copyright," as though they were so valuable that other papers might be tempted to annex them. We have perused with amusement, not unmixed with surprise, these articles which are apparently designed to stimulate popular sympathy in St. Bartholomew's Hospital. Can it really be true that the appalling nonsense contained in these sensational advertisements is necessary in an appeal to the charitable? The headlines of the series are fairly typical. They are the following: "A Great Hospital and its History," "The Hall of Woe," "The Homes of Healing," "The Theatre of Life," and "The Need of St. Bartholomew's." Is there any moral to be drawn from all this parade of the conditions described in such lurid style? We have recently protested against the abuse of literature in the publication of sick room details in the pages of a magazine, but in this series of articles, alternating with displayed advertisements of official character and of equal length, we find graver objections. The appeal to a perplexed public makes much of the truisms of hospital life; it seems to present as marvels of science the conditions which might be met within the walls of all hospitals, and in the end we feel that we have been reading "a thing made of a dream" based upon misunderstood facts. Not for the world would we say anything that would be likely to decrease the chances that St. Bartholomew's Hospital may have of obtaining all the money required by that excellent and venerable institution; but we truly feel that such appeals as have been made in the advertisement columns of the *Times* misrepresent, cheapen, and degrade the services rendered by our great medical charities. The authorities at St. Bartholomew's Hospital may be able to show that in the result much money has been obtained, to which we would reply that the result in this case does not justify the means.

All advertisements must be regarded in the light of business transactions; they are paid for with a definite object. Even accepting the charitable suggestion that this lavish expenditure is paid for and organised by some independent "well-wisher" it may well be doubted whether it will not do harm rather than good. Small subscribers will not readily understand the sacrifice of a whale to catch the sprats, even though it is true that a sufficiency of sprats may outweigh a whale. But apart from mere material considerations the policy of permitting such a deluge of hysterical nonsense is open to question, since nothing but ridicule can result from the absurd exaggerations set forth in these articles. To protest too much is to challenge contradiction. To hold up for admiration and commendation facts which are only the details of ordinary routine within the walls of every

large general hospital can serve no good purpose. Charitable appeals unfortunately must be addressed as much to the emotions as to the intellect; at least, this appears to be the teaching of experience. While admitting the exceptional needs which are urged in many directions by those responsible for the management of our hospitals, and while cordially wishing that all may succeed in the endeavour to put their houses in order, we may express an earnest desire that the unfortunate example set forth in these articles will not be imitated, endorsing the similar wish of our correspondent "A Hospital Surgeon."

Annotations.

"Ne quid nimis."

THE TENURE OF PUBLIC HEALTH APPOINTMENTS.

IN a recent number of THE LANCET two instances were given of the grave results which may follow the very unsatisfactory conditions under which the majority of provincial medical officers of health at present hold office. One referred to Mr. A. Stewart Norman who had been medical officer of health of the Havant rural district for 26 years. The term for which he had been last elected having expired the district council instead of re-electing him as in former years issued an advertisement for a medical officer of health. Happily no other local practitioner applied for the post and Mr. Norman was perforce elected. The other instance has not been concluded so satisfactorily and unless the Local Government Board deals with the matter firmly not only will a grave injustice be done to an eminent public health officer but the public health service will receive one of the severest blows that has been administered to it for a long time. In this case the Chipping Sodbury rural district council sought to sever its connexion with several other councils in Gloucestershire with which it had acted in combination since 1873 for the purpose of appointing a joint medical officer of health. Since the date named Dr. Francis T. Bond has ably served the districts concerned and since 1888 he has been re-elected year by year by the individual councils. In October of last year three parishes were added to the Chipping Sodbury district from Barton Regis, the remaining portion of which district was taken into the city of Bristol. The population of the three parishes was about 4600 and the dispute between the Chipping Sodbury council and its medical officer of health appears to have arisen solely from his refusal to undertake the control of these additional parishes without any additional remuneration. He was eventually given an increased salary at the rate of £33 per annum and apparently out of revenge for his objecting to work for nothing the council has now elected a local practitioner as medical officer of health after first stating in the advertisement relating to the appointment that the officer must reside within the district. Dr. Theodore Thomson, one of the medical inspectors of the Local Government Board, attended the meeting of the district council at which the election took place and stated that the Board disapproved of any secession from the combination of districts and hinted at a possibility of the Board withholding its sanction to the appointment of a local medical man, a course which would prevent the council from obtaining a moiety of his salary from the county council. As already indicated, the council refused to follow the advice of the central authority. The injustice to Dr. Bond is so glaring that it is unnecessary to dwell upon this phase of the question. There is the larger and broader aspect as it affects the public generally which should at once receive the consideration of the Government. The dismissal of an official of the standing and ability of Dr. Bond for no good reason at all and after 32 years of loyal service cannot fail to come as a shock to all provincial medical officers of health and they are not likely to do their work any better with the possibility of similar treatment being meted out to them. Is it likely, too, that the best men amongst medical practitioners will enter the public health service if reasonable security in their official positions is denied to them? There are, indeed, some public health teachers who say that already there is a falling off in the standard of excellence of those who are studying this branch of the profession. The Public Health Bill which Dr. C. F. Hutchinson is desirous of bringing before Parliament has apparently little chance even of being discussed unless the Government affords special facilities, but with the strong recommendation of the Duke of Devonshire's Inter-Departmental Committee on Physical Deterioration to the effect that a medical officer of health who devotes his whole time to the work of his office should in no case, unless convicted of misconduct, be dismissed without the consent of the Local Government Board, there is every justification for the Government bringing in a Bill of its own on the same lines as that of Dr. Hutchinson. Such a Bill ought to meet with approval from both sides of the House, for the principle has been advocated by Mr. Balfour, Sir Michael Hicks Beach, and Sir Francis Sharp Powell, as well as by Sir Walter Foster, Sir Michael Foster, and many of the Members who represent labour interests.

THE TITLE OF THE LICENTIATES OF THE SOCIETY OF APOTHECARIES OF LONDON.

FOR many years it has been felt that the professional title by which Licentiates of the Society of Apothecaries are described is to a certain extent anomalous or incomplete and our columns have on numerous occasions referred to difficulties arising from this cause. The source of the trouble seems to be partly of remote origin but is mainly due to the evolution of new conditions in medical practice during the last 20 years. Briefly stated, the Apothecaries Act of 1815 authorised the Society to appoint a court of examiners, consisting of 12 of its own members, to examine candidates as to their skill and ability in the science and practice of medicine and their fitness to practise as apothecaries. Each successful candidate received a certificate of his being duly qualified to practise as an apothecary and was styled a "Licentiate" of the Society of Apothecaries. The Medical Act of 1858 provided in Section 31 (repealed by the Medical Act of 1886) that every person registered under the said Act should be entitled, according to his qualification or qualifications, to practise medicine or surgery or medicine and surgery as the case might be. By the Apothecaries Act Amendment Act of 1874 the Society was enabled to appoint as examiners persons not members of the Society. The Medical Act of 1886 provided that after June 1st, 1887, no person should be registered under the Medical Acts unless he had passed a qualifying examination in medicine, surgery, and midwifery; this Act further provided that licensing medical bodies might combine for the purpose of holding such qualifying examinations and that assistant examiners might be appointed to take part in the examinations of any licensing body which might be unable to obtain admission to such a combination, the duty of such assistant examiners being to secure the maintenance of the requisite standard of proficiency on the part of the examinees. The Royal College of Physicians of London and the Royal College of Surgeons of England

entered into a combination for conducting their qualifying examinations and the Society of Apothecaries being outside this combination requested the General Medical Council to appoint assistant examiners to take part in its examinations. The General Medical Council thereupon appointed at first three and afterwards five Fellows of the Royal College of Surgeons of England to act as assistant examiners in accordance with the provisions of the Act. The diploma of the Society of Apothecaries is therefore indisputable evidence that its holder has passed examinations in, and is entitled to practise, medicine, surgery, and midwifery, but the Society now considers that the holders of its diplomas are placed at some disadvantage as medical attendants of the public owing to the circumstance that their professional title as entered in the Medical Register describes them merely as "Licentiate of the Society of Apothecaries." The Society, in fact, objects to this title and description as being "misleading and containing no indication that they are legally entitled to practise surgery as well as medicine or that they are in fact legally qualified medical practitioners at all." A memorial to the General Medical Council is therefore in preparation praying that the qualification entered, or to be entered, in the Medical Register shall be changed from "Licentiate of the Society of Apothecaries" to "Licentiate in Medicine, Surgery, and Midwifery of the Society of Apothecaries," or some equivalent title.

THE METROPOLITAN ASYLUMS BOARD AND THE TREATMENT OF PULMONARY TUBERCULOSIS.

"BETWEEN 7000 and 8000 persons (of whom the large majority are adults in the prime of life) die every year in London from pulmonary phthisis." Thus runs the opening paragraph of a memorial, presented on April 15th, 1905, to the Metropolitan Asylums Board by a deputation representing sundry associations concerned with the improvement of the public health. The deputation was organised by the metropolitan branch of the Incorporated Society of Medical Officers of Health and received the support of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis, the Royal Institute of Public Health, the National Health Society, the Royal Sanitary Institute, and other influential bodies. On behalf of the deputation four speakers—viz., Dr. T. O. Dudfield, Sir William H. Broadbent, Mr. W. G. Bunn, and Sir Edmund Hay Currie—addressed the Board, dwelling upon the gravity of the situation and urging the desirability of action upon the lines already followed in regard to other infectious diseases—e.g., scarlet fever, diphtheria, and small-pox. It was suggested—

1. That an order of the Local Government Board be obtained to make Section 5 of the Metropolitan Poor Act, 1867, applicable to the case of poor persons suffering from pulmonary phthisis; and, if necessary,
2. That an Act be obtained to make the provisions of Section 80 of the Public Health (London) Act, 1891, applicable to pulmonary phthisis

The section of the Public Health (London) Act here mentioned is the one which enables the Metropolitan Asylums Board to admit to its fever and small-pox hospitals persons who are not paupers without depriving such persons of any right or privilege or subjecting them to any disability or disqualification. We are given to understand that the deputation was sympathetically received and that the Board referred the matter to its general purposes committee, which, we may note, consists of all the members of the Board, for consideration and report. It goes without saying that we also are entirely in sympathy with the views expressed in the memorial as to the importance of the issue raised by the prevalence of consumption. We wonder, however, whether the deputation fully realised the magnitude of the responsibility which it desired the Metropolitan Asylums Board to undertake. At present the Board has about 40 institutions for the reception of patients of various classes and on Dec. 31st, 1903, these contained 10,812 persons. In the absence of notification it is impossible to estimate with any satisfactory degree of accuracy the number of persons in London who are suffering from consumption, but during the year 1904 there were 7738 deaths from this form of tuberculosis alone. It seems therefore reasonable to suppose that if the provision of adequate sanatorium accommodation devolves upon the Board the work of that body will be at least doubled. The memorial states that "the money value to the community of the lives lost every year from this preventable and curable disease (i.e., phthisis) is enormous and immensely transcends any possible cost to the rates by sanatorium provision." This opinion must, we think, be accepted with some reserve. It involves assumptions as to the merits of sanatorium treatment which are as yet hardly justifiable. As bearing upon this aspect of the subject we would direct attention to an annotation which, under the title "The Value of Sanatoriums," appeared in THE LANCET of Sept. 26th, 1903, p. 896, and to an address by Dr. J. E. Nevins of Liverpool, reported in our issue of April 22nd, p. 1096. The Metropolitan Asylums Board would not, at present, be warranted in incurring a huge expenditure on hospitals for consumptive cases but there can be no objection to its obtaining powers which would enable it to make such experiments in the way of supplying facilities for the open-air treatment of pulmonary tuberculosis as would place the community in a position to decide upon the economic advantages of the procedure.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE election of Sir Richard Douglas Powell as President of the Royal College of Physicians of London will be received with general satisfaction by the medical profession. His invariable courtesy, dignity of manner, and sound judgment render him admirably suited to act as the titular head of the profession and to represent the College both within and without its walls. We offer him our sincere congratulations on his election. At the present time there is an earnest movement on foot to bring about an amalgamation of the principal London medical societies. Sir Richard Douglas Powell is taking a leading part in this endeavour and as President of the Royal Medical and Chirurgical Society he is one of the committee appointed to consider the first steps which will be necessary to bring about the desired result. His election to the Presidency of the Royal College of Physicians of London comes, therefore, at an opportune moment as lending additional weight to his position on that committee. He will thus be a member of the committee in two capacities, for the Presidents of the two Royal Colleges were requested to serve when that body was appointed. The outcome of the proceedings will be awaited with interest.

APPENDICITIS IN A CHILD, AGED 14 MONTHS, DUE TO IMPACTION OF A PIN.

IN the *New York Medical Journal* of March 11th Dr. L. W. Glazebrook has reported the following remarkable case. A child, aged 14 months, an inmate of an orphan asylum, whilst playing at 10 A.M. was noticed to be ill by her nurse. She was cyanotic and had a severe rigor. She was taken up from the floor and cried with pain on being moved. Ten drops of whisky-and-water were given and she fell asleep but was pale and breathed rapidly. She was put to bed and remained quiet until 12 o'clock, when she awoke crying with pain, which appeared to be situated in the lower part of the chest on the right side. The pallor and rapid breathing continued. At 1 P.M., when she was first seen by Dr. Glazebrook, she was semi-comatose and exhibited symptoms of pneumonia. Before she could be examined she died. Her father died some six months previously from some acute

disease and she was admitted to the orphanage two months before her death and then appeared to be healthy. At times she had attacks of "wind colic" which yielded to simple remedies. Dr. Glazebrook, who is a physician to the asylum, was never asked to see her previously. At the necropsy the large omentum was found adherent to the middle of the vermiform appendix. The adhesion was very firm and appeared to be of several months' duration. Three-eighths of an inch from the tip a small round mass was felt in the appendix. Upon opening the latter this was found to be the head of a black mourning-pin. At the place of adhesion was a small perforation of the appendix from which about a drachm of green pus was escaping. The point of the pin was in the position of the perforation. No attendant in the orphanage wore mourning-pins. This fact and the density of the adhesion of the appendix to the mesentery led to the conclusion that the child prior to admission, whilst being suckled by her mother, swallowed the pin. The latter punctured the appendix, set up local peritonitis, terminating in the formation of the adhesion. The fatal illness was of only three and a half hours' duration and was due to perforation of the appendix into the peritoneal cavity. Cases of appendicitis due to foreign bodies, for which at one time fæcal concretions were mistaken, are much rarer than was supposed. In 1000 necropsies Dr. Glazebrook found foreign bodies in the appendix only twice.

LIFE INSURANCE OF MEDICAL MEN BY RUSSIAN LOCAL GOVERNMENT.

THE Minsk local government, in view of the threatened invasion of cholera, has invited medical practitioners, irrespectively of creed, to occupy the vacant practices in the province of the Minsk government. In event of cholera appearing in the government the medical men's lives will be insured by the authorities for £800 and those of the students (students of five years' standing are included in the invitation) for £500. This would seem to be a practical solution of a great difficulty. In times of epidemic, of however dangerous a nature, no medical man ever hesitates to do his duty, but it is impossible for a married man, with wife and children to whom his death would mean absolute poverty, not to feel that he is being asked to carry his altruism to a cruel height. Few young medical men in any country are able to make provision early in their career for the support of a widow or the education of orphans and surely the community, in deference to whose views so many medical men marry while quite young, would act with discriminating generosity if in suitable circumstances it were to insure the lives of medical men for a reasonable sum.

THE TREATMENT OF SPRUE.

IN the *Journal of Tropical Medicine* of March 1st there is a communication by Dr. William Hartigan on the use of cyllin in sprue. The treatment of this disease has hitherto been carried out by dieting and by the use of certain drugs such as crude santonin. Dr. Hartigan, acting on the supposition that sprue is caused by a micro-organism, sought for a germicide which could be given internally with satisfactory results. Amongst others he tried cyllin in three-minim doses given in the form of palatinoids, so prepared as to pass undigested through the stomach but to dissolve in the intestinal canal. This drug was invariably well borne; the number of stools rapidly diminished but constipation was not produced; the motions lost their frothy character and then became gradually bile-stained and more consistent; the offensive odour slowly passed off, till finally the stools became formed or semi-formed, but never assumed the condition of huge putty-like masses so often seen in those cases in which milk alone has been given and in which constipation frequently alternates with diarrhœa. The palatinoids were given every second hour if necessary, but rarely more than eight a day were required, and soon two or three sufficed. The best time to administer them was found to be after food. The tenderness so frequently noted over the lower part of the abdomen disappeared under this treatment, likewise the distension, but flatulence still proved a troublesome symptom to relieve. There was a steady increase in weight with ability to endure cold and to take exercise without fatigue. Dr. Hartigan maintains that the great advantage of giving cyllin is that it enables the patient to resume an ordinary, though restricted, diet much sooner than when treatment by diet alone is adopted. The drug must not be suddenly discontinued but it should be continued in reduced doses for about a month after all symptoms of disease have disappeared. Cases of sprue are not often seen in this country and consequently few opportunities arise for taking any particular line of treatment. Doubtless, however, cyllin will be tried in eastern countries, China more particularly, where this disease accounts for a large number of deaths, and the results of its administration will be watched with interest.

THE MANCHESTER EDUCATION COMMITTEE AND FEEBLE-MINDED CHILDREN.

THE first special school for feeble-minded children in Manchester was opened by the education committee in April, 1902. Now there are three such schools, affording accommodation as follows. Embden-street school can take 90 children, Hague-street 80, and the Harpurhey Hall school 48, making a total of 218. The second annual report of these schools has just been issued by Dr. Henry Ashby and it states that during the year 1904 there were 159 children examined for admission, of whom 139 were passed and 20 were rejected. Of the 20 who were rejected eight were imbeciles and therefore not eligible, while nine were considered as not defective. Dr. Ashby reports that among the upper grade children—i.e., some 30 or 40 per cent. of the scholars—the improvement has been very gratifying and that there is every reason to believe that in the future they will be able to earn their own living at some handicraft. In the next grade, which numbers from 40 to 50 per cent. of the scholars, the improvement is not so marked and it is doubtful whether they will ever be able to earn their own living, but in a labour colony they could contribute materially to their own support. As for the third grade, who number 10 or 12 per cent. of the scholars, it "would be better for themselves and everyone else for them to be inmates of a State-aided institution." The chief causes of the mental deficiency are the fecklessness of parents, bad home conditions, and hereditary influences. As for diet, improper feeding plays a larger part than actual lack of food. On the whole the report shows that the schools are doing much good.

THE PATHOLOGY AND BACTERIOLOGY OF ACUTE MENINGITIS.

OUR knowledge of the pathology and bacteriology of cerebro-spinal meningitis is so recent that a survey of the facts which have been discovered is opportune. Such is furnished by a paper contributed to the *Albany Medical Annals* for March by Dr. W. T. Councilman. All cases of meningitis are cerebro-spinal and strictly speaking the term meningo-encephalitis is applicable, for careful examination always shows some extension of the inflammation to the brain itself. Infectious agents gain access to the meninges by the blood or the lymphatics or by extension from adjacent regions. All forms of meningitis agree more or less anatomically, though there are certain minor differences.

The same kind of exudation may be produced by the diplococcus meningitidis, the pneumococcus, the streptococcus, or the tubercle bacillus. Acute meningitis may be produced by a number of organisms. The three most usually concerned are the diplococcus intracellularis meningitidis, the pneumococcus, and the streptococcus. The first is the cause of the form known as epidemic cerebro-spinal meningitis, which we have recently discussed in THE LANCET of April 14th, p. 1010. But this disease may exist in a sporadic as well as an epidemic form. The mortality is less in this form than in the others and appears to be less in sporadic cases than in epidemics. The diplococcus has been found in the nose associated with acute rhinitis. Possibly it spreads thence to the brain by the lymphatics. With rare exceptions cases of primary meningitis are due to this organism. Out of 61 necropsies performed at the Massachusetts General Hospital and the Boston City Hospital in cases of meningitis 21 were found to be of the epidemic form. In 18 cases the disease was due to the pneumococcus. In six cases the meningitis was secondary to otitis media and in one to infection of a tumour of the sphenoid bone. In one case it was streptococcic and secondary to fracture of the skull; in one, to prostatic abscess; in one, to acute infection of the ethmoid bone; in two, to croupous pneumonia; in four, to broncho-pneumonia and pleurisy; and in two, to acute pneumococcic endocarditis. In but few of the cases did the meningitis appear to be embolic; in most of them it was due to extension by continuity or by the lymphatics. There were 18 streptococcic cases and one was primary. Of the 17 others seven were secondary to fracture of, or operation on, the skull; eight to otitis media or mastoiditis; one to acute streptococcic endocarditis; and one to broncho-pneumonia and cystitis. Fatal sporadic cases were equally divided between the three organisms mentioned above. Two cases were due to the staphylococcus aureus. In one case the anthrax bacillus produced the meningitis, which was secondary to a primary lesion on the face.

THE MORTALITY FROM PLAGUE IN INDIA.

IN THE LANCET of March 25th, p. 807, we commented upon the appalling mortality from plague, a disease which is at present scourging India, and gave it as our opinion that the urgency of the situation has not as yet been fully recognised. At the Comitia of the Royal College of Physicians of London held on April 17th the following motion was proposed by Dr. Norman Moore, seconded by Sir Dyce Duckworth, and supported by Dr. J. F. Payne—

> That in view of the constantly increasing mortality from plague in India since 1896 and of the recorded mortality of 252,000 in January and February of the present year a committee be appointed to report to the College on the desirability of the College addressing His Majesty's Government on the subject.

The motion was carried and the nomination of the members of the committee was left in the hands of the President. It is true that the prevention of plague in an oriental country presents great difficulties. The poorer classes of India have but little reserve of strength, caste prejudice and religious difficulties stand in the way of such hygienic measures as notification, preventive inoculation, and proper sanitation, while the unfortunate infection of a batch of plague serum with the germs of tetanus which occurred but recently has naturally caused a dislike to this method of prevention. Moreover, the tendency of the oriental races when afflicted by illness is not merely to take no measures for treatment but also to refrain from making any mental effort to get well. This they would consider impious and it is not so very long ago since we in this country viewed cholera in the same way as a divine punishment, so that many persons considered that to take hygienic measures was fighting against God. We have now learned better and have come to agree with the opinion of Salvian concerning the conquest of Rome by the Goths, that our evils are due to our vices. It is not nowadays a characteristic of the inhabitants of these islands to sit with folded hands and not to do their utmost to combat difficulties. We trust that the committee to be appointed will strongly recommend the Royal College of Physicians of London to make urgent representations to the Government and to assist our rulers in every possible way to do their utmost to remove what we must stigmatise as a blot upon our administration of the chief part of our eastern empire.

RESULT OF RECENT RAILWAY ACCIDENTS IN THE UNITED STATES.

A REPORT of the railway accidents in the United States during the months of October to December, 1904, has been compiled and published by the Inter-State Commerce Commission. During that period 53 passengers and 189 employés were killed and 1430 passengers and 1868 employés were injured—a total of 242 persons killed and 3298 injured in railway accidents. Other accidents to passengers and employés, not the result of collisions or derailments, bring the total number of casualties up to 14,978—951 killed and 14,027 injured.

HERPES OF THE FIFTH NERVE AND SPINAL LYMPHOCYTOSIS IN MUMPS.

A NUMBER of nervous complications, such as neuritis, meningitis, and deafness, may occur in mumps. The recent practice of lumbar puncture has enabled French observers to throw light on the pathology of these complications. M. Monod has shown that the systematic practice of lumbar puncture in children suffering from mumps frequently reveals the existence of spinal lymphocytosis. M. A. Chauffard and M. L. Boidin have confirmed this fact and have demonstrated a relation between the meningeal reaction and certain nervous symptoms, such as headache and bradycardia.[1] They thought that the meningitic process was localised in the neighbourhood of the medulla and the pons. Subsequently M. Dopter observed facial paralysis in a case of mumps with meningeal lymphocytosis and concluded that it was due to a meningeal lesion in the neighbourhood of the pons. At the meeting of the Société Médicale des Hôpitaux of Paris on Feb. 17th M. J. A. Sicard reported a case which confirms this conclusion as to the localisation of the meningeal process and in which occurred a complication which does not appear to have been previously described in mumps, herpes of the fifth nerve. A boy, aged 12 years, went to hospital suffering from mumps on both sides. The disease began four days previously with fever, insomnia, and headache. On the following day the parotid glands were swollen. He was prostrate and could scarcely walk. He complained of frontal and occipital headache and pains were provoked in the parotid glands by palpation and mastication. The left parotid gland was more swollen than the right. The temperature was 100·9° F., the pulse was 64, and the respirations were 20. Kernig's sign was present in slight degree. The patient was asked to go into hospital but refused. Nine days later he returned with an eruption on the face which had appeared on the previous day and was accompanied with an exacerbation of the headache, the fever, and the general lassitude, although the parotid swellings had almost disappeared. The eruption was a well-marked herpes of the right side of the face situated in the supra-orbital region, on the upper lid, and in the pinna. In the evening he vomited thrice, the neck was rigid, and Kernig's sign was present. The temperature was 101° and the pulse was 70. On the following day fresh vesicles appeared and the left half

[1] THE LANCET, May 7th, 1904, p. 1297.

of the face became œdematous. Lumbar puncture yielded fluid very rich in lymphocytes but limpid. On the following days he rapidly improved and the vesicles dried up. A second lumbar puncture, performed 17 days after the first, showed slight lymphocytosis. The herpes involved the supra-orbital branch of the ophthalmic division of the fifth nerve and the auriculo-temporal branch of the inferior maxillary division. M. Sicard thinks that it was due to extension of the meningeal process to the Gasserian ganglion.

PRESCRIBING v. DISPENSING IN MEDICAL PRACTICE.

IN May of last year a committee was appointed by the Islington Medical Society to inquire into the relative merits of prescribing and dispensing in medical practice. The points discussed were:—1. The ethical aspects of this question as regards patient, druggist, and practitioner. 2. Objections urged against prescribing on the ground of loss of income by medical men: (*a*) by their seeing patients less often than when dispensing; (*b*) by misuse of prescriptions—e.g., unauthorised repetition and transfer of prescriptions to others; and (*c*) by patients being driven, on account of cost of medicines, to hospitals, dispensaries, and prescribing druggists. 3. Profit or loss on drugs, surgery expenses, and repetitions of medicines under either system. 4. Position of druggists in relation to this subject as regards charges, counter-prescribing, and so on. 5. Position of the poor generally and of club patients under either system. The committee has made its report and the conclusions arrived at by it are the following. As to Question 1 the committee is agreed that, considered from the ethical standpoint, the use of prescriptions is preferable to dispensing. As to Question 2 it states that it would prefer to prescribe but must admit that to do so would entail loss to the practitioner, which loss, however, might by arrangement be minimised. In this connexion it wishes to direct attention to the recommendations of the medico-political committee of the British Medical Association,[1] that—

(*a*) Members of the profession should adopt the practice of indicating on every prescription the period or the number of times for which it was intended to be dispensed.

(*b*) That, in order to prevent copying, all prescriptions should be signed by the practitioner with his full name and address and not merely initialled.

(*c*) That medical practitioners should observe the rule of not recommending drugs or special preparations to their patients by name, but always ordering them by prescription.

As to Question 3, the committee considers that in respect of the items under this heading it is more profitable to dispense than to prescribe. As to Question 4, it believes that druggists are, as a rule, disposed to be amenable to the views of medical men if the latter should agree to prescribe instead of dispensing. As to Question 5, it considers that the prescribing system, if adopted generally, would be applicable to practice among the poor, including club patients.

THE STERILISATION OF CATGUT.

M. Albert Petit in the *Journal de Pharmacie et de Chemie* of March 16th gives the results of his work on the various methods of sterilising catgut. Maceration of the gut in carbolised oil was found to be impracticable because the process takes one year for complete sterilisation and the product is slippery to the touch. Dipping in a solution of nitrate of silver until the gut was blackened and the method of sterilising in a dry heat at 150° C. both gave a hard gut which was difficult to tie. Acetone was not found better for the purpose than absolute alcohol and was rejected owing to its unpleasant odour. The English method of dipping the gut first in formaldehyde and then in boiling water for a time depending on the thickness of the gut is, in the opinion of M. Petit, too complicated a process to be above reproach. He has found the absolute alcohol method to be the surest and the most practical. The actual sterilisation is first effected by gradually heating the gut to 130° C. for half an hour. It is then quite free from water and as a result somewhat brittle, but just before use it is placed in sterilised water or in any antiseptic solution, when it takes up water and regains its suppleness, elasticity, and firmness and may be depended upon as a perfectly sterile suture.

[1] Supplement to the Brit. Med. Jour., Nov. 26th, 1904.

THE ALIMENTARY VALUE OF SUGAR IN TUBERCULOSIS.

IN a contribution to the Société de Thérapeutique René Layfer discusses the value of sugar in the dietary of tuberculous patients. Sugar being easy to take and to assimilate and having a high calorific value might, it was thought, replace a part of the albuminoids in the diet without lowering the weight of the patient. Two cases were taken in which the diet consisted of 300 grammes of raw meat and two grammes of total albumin per kilogramme. The meat was reduced to 150 grammes, equivalent to 1–2 grammes of albumin per kilogramme. At the end of 12 days of this fare increase of weight had ceased in one case and a loss in weight of 300 grammes had occurred in the other. Each patient was then supplied with 70 grammes of sugar in addition and a gain in weight was experienced. In a general way tuberculous patients tolerate for a long time from 50 to 90 grammes of sugar daily. Thus a gain in weight of from 20 to 90 grammes per day was obtained by simply adding to the patient's ordinary diet from six to ten pieces of sugar daily, administered in a little milk after each meal. But sugar was found to be particularly valuable as an addition to a strict milk diet, yielding quite a perceptible increase in weight, as shown by a typical case. A patient who through a loathing of food was taking only from two to two and a half litres of milk a day and had become quite emaciated regained his usual weight in 45 days by adding to the milk diet 200 grammes of sugar daily. It is particularly with milk that large quantities of sugar are tolerated, either dissolved in the milk or dissolved in water and taken after each dose of milk. The writer mentions six other cases in which the diet consisted of three litres of milk a day and from 50 to 200 grammes of sugar; in each case a gain in weight varying from 15 to 75 grammes a day was experienced and the diet was tolerated by the patient.

TUBERCULOSIS IN PENAL INSTITUTIONS OF THE UNITED STATES.

Dr. J. B. Ransom, physician to Clinton prison, Dannemora, New York State, has prepared a report on the above subject for the Eighth International Prison Congress, 1905. The report shows that pulmonary tuberculosis is very prevalent in prisons but that owing to a lack of statistics authentic information on the subject is difficult to procure. Dr. Ransom found it necessary to an intelligent plan of procedure to place himself in touch with all the penal institutions of the country, asking for certain information with regard to pulmonary tuberculosis. With the information thus gained, together with his own experience, Dr. Ransom has summarised the means which he considers most likely to secure the best results in the direction of prevention and treatment of consumption in prisons. Among these are the following: improved construction, housing and working environment, larger, better ventilated and lighted prison cells; the recognition of the prisoner's receptivity to infection and his assignment to the most favourable opportunities for resisting the disease; substitution in so

far as is possible of other forms of punishment for those of be solitary and dark cell with starvation diet; provisions for proper clothing, its cleansing and disinfection, and the administration of spray baths and physical exercise in the open air; the absolute separation from the prison population proper of all tuberculous subjects, together with strict regulation of the spitting habit, the destruction of sputa, the absolute disinfection of beds and bedding used by one inmate and transferred to another's use, and the control of the production of dust in living quarters and workshops; special wards for the treatment of all active cases; and a compulsory law compelling the examination of everyone admitted to any penal institution for the purpose of an early detection of the disease. Dr. Ransom points out that it is not only incumbent upon the State to care for prisoners properly upon humanitarian grounds but that it is necessary in the interests of public health to send forth a released prisoner in a good physical condition. For instance, if an individual is sent into the world of free men suffering from consumption in an advanced stage he is both a menace and an expense to the community at large. Therefore, from an economic and public health standpoint, the prisoner's health should be carefully guarded whilst under restraint.

THE VISIT OF BRITISH PHYSICIANS AND SURGEONS TO PARIS.

WE are informed that the British ambassador in Paris, Sir Francis Bertie, has accepted an invitation to be present at a banquet to be given on May 13th to the British medical men visiting Paris. The honorary secretaries of the London committee ask us to state that the failure of so many members of the British party to respond to the inquiries in the circular addressed to them ten days ago is causing great embarrassment not only to them but also to those who so generously propose to entertain parties at Vichy and Evian and at the watering places of Béarn. We are also asked to state for the information of members of the party that ladies are invited to attend the opening reception at the Sorbonne on Wednesday evening, May 10th, at 9 P.M., and that the return tickets at reduced fares, to be obtained on presentation of a voucher, will be available by any of the S.E. & C.R. Co.'s services from Charing Cross or Victoria, will be issued on any date from May 6th to 11th inclusive, and will be available for a fortnight from the day of issue.

THE medical officer of health of the Cape Colony states that for the week ending April 1st the condition of the colony as regards plague was as follows. At East London five cases of plague were discovered during the week, four of the patients being European males and one a native male. Plague-infected rodents were found at Port Elizabeth and at East London, and at the latter place one plague-infected cat was found also. In the other districts of the colony no case of plague in man or in other animal was found. In Brisbane for the week ending March 4th one case of plague was notified, the patient, a man, dying on March 2nd. In the week ending March 11th two cases occurred. One patient was a Chinese, who died on the 7th, and the other a boy whose case was notified on the 9th. For the week ending March 18th no cases were notified. Plague-infected rodents continued to be found.

THE colleagues, former pupils, and other friends of Professor Samuel Pozzi of Paris have arranged to present him with a medal in commemoration of his having presided over the seventeenth French congress of surgery and having been promoted to the rank of Commander of the Legion of Honour. The secretary of the committee in charge of the arrangements is Dr. Jayle. The subscription list will remain open until June 15th and contributions will be received by M. Pierre Masson, éditeur, 120, Boulevard St. Germain, Paris. Subscribers of 25 francs and upwards will receive a bronze medal before the end of the present year.

THE annual dinner of the Royal Sanitary Institute will be held in the Prince's Restaurant on Friday, May 12th, at 7 P.M., the Duke of Northumberland, President of the Institute, being in the chair. All applications for tickets should be made to Mr. E. White Wallis, secretary, at 72, Margaret-street, London, W.

THE Ingleby lectures of the University of Birmingham for 1905 will be delivered on Thursdays, May 4th and 11th, at 4 o'clock, in the Medical Lecture Theatre, by Dr. James Kerr, medical officer (education), London County Council, who has taken for his subject "Mentally Defective Children."

THE death is announced on April 20th, at the age of 72 years, of Sir John Sibbald, M.D., F.R.C.P. Edin., who was from 1878 to 1899 a Commissioner in Lunacy for Scotland and wrote much as a recognised authority upon insanity regarded chiefly from its sociological side.

MEDICINE, ITS PRACTICE AND ITS PUBLIC RELATIONS.

CHAPTER IX.[1]

THE COLONIAL MEDICAL SERVICE.

The Colonial Appointments—Their Anomalies and Contradictions.—The Well-organised West African Medical Staff.

THE duties and responsibilities of the Colonial Medical Service are rapidly increasing with the vastness of the epidemiological fields open to its members. But the service is in a muddle. It contains good berths and often has thoroughly good men to fill them, but it is in course of evolution and presents the inequalities and anomalies arising from its transitional state. The great self-governing colonies, of course, stand in no need of an Imperial service. Canada, Australia and New Zealand, Cape Colony and Natal possess properly equipped medical schools and hospitals. They, notably the first three, turn out sufficient medical men from the local supply to meet the local wants, while they attract by the freedom of colonial life and the opportunities of private practice a certain number of medical men from the mother country. India is manned by the Indian Medical Service, as well as by highly educated and competent natives, to whom some superior opportunities, though not many, are now allowed for holding appointments. These countries represent the flower of our dependencies and they have reached a stage of development when they require no medical service supplied to them from a central government. At the other end of the scale we have countries which are not yet ripe for a civilian medical service and for whose needs, as far as the men of our own race are concerned, the officers of the Army Medical Service, or the medical men in the pay of pioneering expeditions, must suffice. Certain protectorates again, as Cyprus and British Borneo, fall under the jurisdiction of the Foreign Office, with whom the responsibility of finding the necessary medical men will rest until the country becomes a Crown Colony. Until this month Uganda has been in the same position, but on April 1st the jurisdiction over the East Africa Protectorate passed from the Foreign Office to the Colonial

[1] Chapters I., II., III., IV., V., VI., VII., and VIII. were published in THE LANCET of Feb. 18th (p. 447), and 25th (p. 517), March 4th (p. 593), 18th (p. 786), and 25th (p. 847), April 1st (p. 877), 15th (p. 1017), and 22nd (p. 1089), 1905, respectively.

Office. Between these two extremes come the countries the medical departments of which are regulated from the Colonial Office; they are:—British Guiana, Jamaica, Trinidad, Tobago, Windward Islands, Leeward Islands, British Honduras, Fiji, Ceylon, Straits Settlements, Federated Malay States, Hong-Kong, Mauritius, Seychelles, Gibraltar, St. Helena, Falkland Islands, Gambia, Sierra Leone, the Gold Coast, Lagos, Southern Nigeria, and Northern Nigeria. It is in the West Indies and the West African colonies that medical officers are chiefly required and the last six of the countries enumerated have been formed into the West African Medical Staff, a definite and properly organised service which can be considered by itself. In the other colonies special conditions attach to the service, the leading features of which may be mentioned.

The majority of the West Indian appointments involve medical charge of a district, including, as a rule, the care of a hospital, poorhouse, asylum, or other institution and free attendance on the aged and children. Passage money is granted to medical officers on first appointment, an annual vacation on full pay is given not exceeding three months in two years, and there are pensions, as a rule, where private practice is not permitted.

British Guiana.—There are 42 appointments. After two years' probation at a salary of £200 per annum, when quarters are provided but private practice is not allowed, the officer is appointed to the permanent staff with a salary of £400 per annum, rising by annual increments to £700. He can carry on private practice and receives a travelling allowance varying with the range of the duties from £100 to £150 per annum. The governor of the colony can also make appointments to the service of local practitioners who act as supernumeraries upon temporary agreements.

Jamaica.—There are 54 appointments, mainly district appointments with private practice allowed. The salary paid by Government varies from £100 to £250 per annum, and in most cases is £200. Newcomers may be attached temporarily to the public hospital in Kingston, on a salary of £200 per annum, private practice not being allowed.

Trinidad.—In Trinidad there are 32 appointments. After two years' probation at a salary of £250 per annum, with furnished quarters, during which time they are usually attached to the Government hospital, the surgeons obtain district appointments, to which they are promoted as vacancies occur. The pay is £300 per annum, which is increased to £400 and upwards by various allowances for horse, house, or other purposes. These posts carry the right to private practice. After every five years an officer is given an additional personal allowance at the rate of £50 per annum. In future there will be few appointments in Trinidad, as the Government is aiming at the introduction of a system by which the work shall be performed by private practitioners under temporary contracts. In these three colonies there is a Civil Service Widows' and Orphans' Fund established by law, to which all medical officers must contribute 4 per cent. of their salaries.

Tobago.—In the island of Tobago there are three district appointments with salaries of £250 per annum, with quarters.

Windward Islands (Grenada, St. Lucia, St. Vincent).—The 22 appointments are, with few exceptions, district appointments with the right to private practice attached. The salaries paid by Government vary from £250 to £400, with allowances in certain cases.

Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).—The 25 appointments are of the same nature as in the Windward Islands. The Secretary of State reserves the power to transfer a medical officer from one island to another in each case. The medical officers receive fees for successful vaccinations, post-mortem examinations, attendance and giving evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also allowed private practice.

British Honduras.—There are four medical appointments, besides the principal post of colonial surgeon, in all of which private practice is allowed if it does not interfere with the public duties of the officer. The pay varies from £150 to £250. Two of the medical officers are also district commissioners and receive £300 for the combined posts of medical officer and district commissioner.

Fiji.—The medical service has recently been reorganised and officers appointed in future will be styled Government medical officers and receive a salary of £300, rising by annual increments of £10 to £400. They will be allowed private practice so far as is consistent with the proper discharge of their duty and will have charge of hospitals or of districts at the discretion of the authorities. The posts will be pensionable but an allowance in lieu of free quarters will not be pensionable. There will be ultimately 15 Government medical officers in addition to a senior medical officer (who at present receives £450 and £50 allowance for house rent) and a chief medical officer who will have £600 a year. Government medical officers will be given free quarters or an allowance in lieu thereof. This privilege is non-pensionable.

Ceylon.—The pay of the 36 sub-assistant colonial surgeons and eight other subordinate medical officers is at the rate of from Rs.900 to Rs.1600 per annum. There are nine deputy assistant colonial surgeons, with salaries at the rate of from Rs.1500 to Rs.2500. The 23 assistant colonial surgeons are paid at the rate of from Rs.3000 to Rs.5000 per annum and the six colonial surgeons and three other superior medical officers at a rate of from Rs.5500 to Rs.8000 per annum. The principal civil medical officer receives Rs.15,000, rising by annual increments of Rs.500 to Rs.18,000 per annum. As might be inferred from the scale of payment private practice is allowed to the subordinate officers but the colonial surgeons may take only consultation practice. The medical service of Ceylon is mainly recruited from among gentlemen born in the island but possessing British diplomas.

Straits Settlements.—Two house surgeons in the General Hospital, Singapore, and one in the General Hospital, Penang, receive £300, rising to £360, with free quarters. There are ten other subordinate posts in the medical department with salaries varying from £300 (rising to £360) to £780 (rising to £900). Some of these posts have free quarters attached and the holders of some are allowed private practice within limits. The salary of the principal civil medical officer is £1000.

Federated Malay States.—There are 18 district surgeons on salaries varying from £480 (rising to £540) to £720 (rising to £840). There are two assistants in the Institute for Medical Research on salaries of from £360 to £420. These posts are non-pensionable and the holders are eligible for appointment as district surgeons. Medical officers have no claim to private practice, which is limited, and the enjoyment of it is strictly subject to the permission of the Government.

Hong-Kong.—The principal civil medical officer receives £800 per annum, rising to £1000. There are two health officers of the port, four medical officers of health, and four assistant surgeons with salaries of £480 rising to £720. Most of these appointments are pensionable. Private practice is not allowed and free quarters are only given in a few cases.

Mauritius.—There are 24 medical appointments in all. Of these 14 are minor appointments, with salaries varying from Rs.500 to Rs.1500 per annum. The other 10 appointments have salaries varying from Rs.2000 to Rs.9000. Free quarters are not given in most cases and private practice is not allowed in the best appointments. The service is mainly recruited from among gentlemen born on the island. Officers

in the service of Mauritius are required annually to contribute 2 per cent. of their salaries towards their pensions.

Seychelles.—There are four medical appointments. The Government medical officer receives Rs.4000. The assistant Government medical officers receive Rs.3000. The holders of these latter appointments have free quarters. Private practice is allowed.

Gibraltar.—There is a surgeon to the Colonial Hospital receiving £275 and an assistant surgeon receiving £96, in each case with quarters, fuel and light allowance, and permission for private practice. The surgeon of the hospital, as medical officer of the civil prison and lunatic asylum, receives £55 and horse allowance of £42. The assistant surgeon is also public vaccinator, police surgeon, for which he is paid £45, and port surgeon, for which he receives £109.

St. Helena.—The colonial surgeon receives £300 per annum and £30 horse allowance. Private practice is allowed.

Falkland Islands.—There are two appointments, one of which is paid at the rate of £300 per annum, with £25 as health officer, and the other at the rate of £200 per annum. Private practice is allowed in both cases.

Cyprus.—There is a chief medical officer paid at the rate of £500 per annum, two district medical officers paid at the rate of £250 per annum, and one paid at the rate of £200, rising by £10 a year to £250, all enjoying private practice and receiving 2*s.* per diem forage allowance. These are the only medical appointments in the island which are open to English candidates and they are made by the Foreign Office.

All applicants for medical employment in these 18 colonies must be between the ages of 23 and 30 years, and must be qualified for registration. Preference will be given to those who have held appointments as house physicians and house surgeons; certificates of moral character and of sobriety will be required, and every officer before being appointed will be medically examined by one of the consulting physicians of the Colonial Office. There are pension funds established for widows and orphans in Ceylon, Straits Settlements, the Federated Malay States, Hong-Kong, and Mauritius, to which all permanent Government servants must subscribe 4 per cent. of their salaries.

Cape Colony and Natal are, as has been said, self-supporting colonies, but other districts in South Africa need the help of the central Government. Medical appointments in the Bechuanaland Protectorate and Basutoland are made only on the recommendation of the High Commissioner of South Africa, who usually appoints local candidates. Appointments of medical officers to the South African Constabulary are also made by the High Commissioner on the recommendation of the Inspector-General. Medical appointments in the Transvaal and Orange River Colony are only made on the recommendation of the governor of those colonies.

The anomalies and contradictions implied in these notes upon the Colonial Medical Service hardly require to be pointed out. Salaries differ with no apparent difference in work or responsibility. In some places there is a widows' and orphans' fund, in others there is not, and where it exists the deducted percentages are not uniform. Here private practice is allowed and here it is not, or at any rate specific permission is omitted. In some places the service is largely recruited from the native-born, who are given the better berths, and in others they do not seem to be taken into consideration. There are no settled rules about pensions, allowances, or extra fees. Titles are given at haphazard; one man is called a principal civil medical officer and another a chief medical officer. It might be guessed that they hold the same rank but a Government medical officer, a colonial surgeon, and a district surgeon are not obviously interchangeable characters. There are no provisions for promotion which entail that the headship of the medical department in a colony will be obtained by a member of the medical staff of the colony, so that men may be suddenly disappointed in their hopes of securing berths which had seemed well within their grasp. When it is remembered that some appointments are made by the Foreign Office, some by the Colonial Office, some by colonial governors, and others by trading companies it will be seen that it is no overstatement to allude to the service as "in a muddle."

We now come to that branch of the colonial medical service which is a properly organised entity.

The West African Medical Staff.—The medical services of the West African colonies and protectorates—viz., Gambia, Sierra Leone, the Gold Coast, Lagos, Southern Nigeria, and Northern Nigeria—form one service under this name. All the medical officers for the service are selected by the Secretary of State for the Colonies. They are engaged in the first instance for one year on probation and, except the principal medical officers, are allowed to engage in private practice as long as it does not interfere with the efficient discharge of their official duties. There are fair allowances when junior officers discharge the work of their seniors by deputy. Stores are transported free, out-of-pocket expenses in travelling are recoverable, there are proper horse, field, and outfit allowances, and all medical men are paid 10*s.* per diem extra with free rations, or 3*s.* in lieu of rations, while serving on military expeditions. Candidates for the West African Medical Service must be British subjects of European parentage, preferably unmarried and between the ages of 25 and 35 years. They may choose their colony or protectorate, and as far as possible their wishes will be met, but they must make up their minds carefully as transfers are seldom made.

The grades and salaries of medical officers are shown in the following table:—

Grades.	Gold Coast, Southern Nigeria, Northern Nigeria.			Sierra Leone, Lagos.			Gambia.		
	Minimum Salary.	Annual increment.	Maximum salary.	Minimum salary.	Annual increment.	Maximum salary.	Minimum salary.	Annual increment.	Maximum salary.
	£	£	£	£	£	£	£	£	£
Principal medical officer	1000	50	1200	800	50	1000	—	—	—
Deputy principal medical officer ...	700	25	800	—	—	—	—	—	—
Senior medical officers	600	20	700	600	20	700	500	20	600
Medical officers ...	400	20	500	400	20	500	400	20	500

Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for two or three months at the London School of Tropical Medicine or at the Liverpool School of Tropical Medicine. If for any reason he does not undergo the course before appointment he will be required to take out instruction on less favourable pecuniary terms during his first leave of absence. The cost of the tuition, fees, board, and residence during such instruction, amounting to a maximum of £48 8*s.* 10*d.* for three months, will be borne by the Government, and a daily allowance of 5*s.* will be paid to each candidate during the course and may be continued subsequently up to the date of embarkation. These payments will be made subject to the candidate signing an agreement by which he will be bound to refund them (1) if he declines to accept an appointment in any of the colonies or protectorates for which he may be selected; (2) if he fails to obtain the certificate referred to in the next paragraph; or (3) if he relinquishes the West

African service for any other reason than mental or physical infirmity or is removed for misconduct within three years of the date of his arrival in West Africa. Every candidate sent to either of the schools of tropical medicine is required to obtain a certificate showing that he has satisfied the school authorities with regard to his regularity of attendance, progress, and proficiency.

The arrangements for special allowances and leave of absence are fair. The ordinary term of residential service is one year, followed by leave with full pay during the voyages to and from England and for four or two months clear in England, according as the officer is returning for further service in West Africa or not. If an officer is detained beyond the year additional leave is given with full pay for ten days in respect of each completed month beyond 12, whether he is returning or not. If he is invalided before the end of the year the leave with full pay is for the voyages and for ten or five days in respect of each completed month, according as he is returning or not. Leave granted on the understanding that an officer will return is known as "return leave" and any pay drawn in respect of such leave is liable to be refunded if an officer does not return. Leave may be extended for a limited period with half or no pay on the ground of ill health or without pay on other grounds. Free passages are given to all officers who are granted leave and on first appointment. On attaining the age of 50 years, or after 18 years' service (of which at least 12 must have been residential), an officer is qualified for a pension calculated at one-fortieth of the last annual salary for each year of service. If invalided after a minimum of seven years' service he is qualified for a pension calculated at the same rate. If invalided before completing seven years' service he is qualified for a gratuity not exceeding three-fourths of a month's salary for each six months of service, provided that he has been confirmed in his appointment and that he is specially recommended by the governor or high commissioner for such gratuity. At the end of nine years (of which not less than six must have been residential) an officer of the West African Medical Staff is permitted to retire with a gratuity of £1000, or at the end of 12 years (of which not less than eight must have been residential) with a gratuity of £1250, such gratuities being *in lieu of* pension.

The successful organisation of the West African Medical Service makes it a practical question to ask why the Colonial Medical Service of the empire should not be organised on similar lines. The colonial service, as a whole, has grown up gradually and has developed with the growth of the empire into a conglomeration of elements that require rearrangement. It should be placed on a basis similar to that of the Army and Indian Medical Services, though avoiding the blemishes in these schemes. The age of the candidates should be made uniform and probably it would be advantageous to admit no one over 28 years of age. There must be hesitation in recommending that entrance should be by a competitive examination, because the multiplicity of examinations is already the bane of the young medical man's life, but an examination in hygiene and tropical medicine should be strict, compulsory, and competitive to this extent that future appointments should in some measure be made to depend upon how a candidate has acquitted himself at this test. All gradation of rank and title should be definitely settled; pay and allowances should be equalised in accordance with such a scheme and in accordance also with the marked unhealthiness of certain districts. The whole service should be a definite department of the Colonial Office; the position of the Foreign Office in having certain appointments to give away in the Colonial Medical Service forms a ridiculous and unnecessary complication, while the powers at present given to colonial governors are as often as not used wrongly. It may be asked: Who knows local conditions better than the local man? The answer to this is that special men should certainly be appointed in special circumstances by the colonial governor. But if the Colonial Medical Service is to be organised into strength the privilege of the governors should be sparingly used. For the filling up of good berths by local men must have a bad effect on the service as a whole because it militates against recruiting in the mother country. Save in peculiar circumstances and with permission of the Colonial Office it would be advisable for all appointments to be filled by the promotion of men in the service. And when outsiders are given berths the appointments should be temporary and supernumerary, although they should be well paid; indeed, they should be exceptionally well paid because they should only be made in exceptional circumstances.

(To be continued.)

THE ROYAL ACADEMY.

THE 137th exhibition of the Royal Academy will open its doors to the public on Monday, May 1st. We doubt if that public will consider the exhibition to be marked by any very striking picture—indeed, the want of imagination displayed by the majority of the painters both in subject and treatment is notable, but the collection as a whole is up to the usual standard. The accidents of hanging prevent many of the pictures from showing their merits, but they must always occur at this exhibition. One of the most interesting works in the galleries is Mr. Sargent's portrait (51) of Señor Manuel Garcia, which it will be remembered was painted for presentation and was formally handed over to Señor Garcia on the occasion of the hundredth anniversary of his birth on March 17th. The portrait is in every way worthy both of the artist and of his subject and the many medical subscribers to the testimonial will be glad to see for themselves that it is so. Of Mr. Sargent's other works the most striking is (168) the portrait of the Countess of Warwick. On first sight the right arm appears too short, judged by the standard of the apparent length of the figure, but the eye is led far below the feet of the figure, owing to the train flowing down from the step on which the subject is standing. But when once the position is mastered the apparent deformity disappears. Of other portraits (151) Mrs. Rodocanachi, by Mr. S. Melton Fisher, should on no account be missed, and the same may be said of the other work by this artist, (266) "The Prelude," with its delicate colour scheme of pinks and greys. Besides these we may mention (722) "Portrait of a Child," by Mr. R. Peacock; (789) "A Portrait," by Mr. Frank Daniell, a clever study in blacks; (787) "The Chinese Kilim," by Mr. George Henry; and (176) "Blue-bow," by Mr. J. J. Shannon. In the watercolour room is a very graceful portrait, possibly a pastel, of Miss Fairfax by Mr. St. George Hare.

Of subject pictures one of the best in our opinion in the exhibition is (194) "The Morning of Sedgemoor" by Mr. Edgar Bundy. The artist shows us the rough, untrained, heroic peasants of the West who laid down their lives in a mistaken and premature effort to rid the country of its lawful king. How they failed is known to all but some two years later the last of the Stuarts himself fled. The scene is a barn in which lie asleep, or only just awake, the men who a few hours later were yielding their lives besides the Bussex Rhine, their only arms a few scythes or bills rudely fastened to poles. In Gallery IV. are two imaginative works, one by Mr. J. C. Dollman (236), entitled "Harvest." The subject is not a cheerful one, for it is a long train of wounded men wearily plodding their way, some in wagons and some on foot, along an English country road. In (242) "Midsummer's Eve" Mr. J. H. Lorimer has painted a charming old-world garden in which around a rose-bush swings a dance of graceful unearthly figures. Mr. W. T. Wood in (273) has chosen a place with a most unromantic name, "Pigshoot Ford," but he has made a very charming landscape in which nymphs, who, let us hope, did not know the name of the place, are

bathing and in (279) Mr. E. Matthew Hale has a powerful work in which barbarian invaders, presumably Huns or Picts, are returning from a fray, driving with them stolen cattle, through a snowy pass.

Of other pictures we may mention (299) "Betrayed by the Moon," by Mr. C. Napier Hemy, representing a torpedo destroyer trying to approach a battleship which has her search-lights in full work. We must confess to having been puzzled by the title, for if it is the destroyer which has been betrayed we should have said that there was no need of the moon to betray her for her funnels are spouting flame, but perhaps she has just turned on her forced draught to escape. Mr. Mount Loudon in (163) "The Sundial" shows us a garden with high-born eighteenth century ladies and Mr. J. Farquharson (431) for once has a picture without sheep in snow. In (466) "The Kite," Mr. Charles Sims once more gives us the same breezy effect as in his "Top of the Hill" which was exhibited two or three years ago and (546) "Winter in the Marshes," by the late George Boughton, is a sad reminder of what art has lost by his death. Other notable pictures are (674) "The Shepherd," by Mr. Edward Stott; (711) "Sisters," by Mr. Chevallier Tayler, which is very far from being what is generally expressed by such a name in a catalogue; and (833) "The Doctor," by Mr. Charles E. Stewart. Mr. La Thangue has his usual delightful sun-flecked country scenes and in the Water-colour Room there are many excellent works, especially (849) "Springtime near Amalfi," by Mr. A. Steevens; (852) "The Sea King," by Mr. A. Rackham; (898) "A Dance in Andalusia," by Mr. G. Murray; (899) "A Surrey Chalk Pit," by Sir E. Poynter; and (927) "A Hanging Committee," a clever study of bats, by Miss Laura Darcy. In the Sculpture Room we noted a striking medallion of Sir William Church, by Miss Ethel A. C. Bower (1793). In the Black-and-White Room there is a novelty in the shape of two coloured prints by Miss E. Milner—namely (1341) and (1347)—being after portraits by Lely and Romney respectively.

GERMAN METHODS OF COMBATING TUBERCULOSIS.

AT the beginning of the year 1904 there were in full activity in Germany 71 public sanatoriums for tuberculous patients (with 15 in course of construction), 27 institutions under private management, about 60 children's homes and hospitals, 27 institutions for the reception of convalescents during the daytime, 26 polyclinics, two rural colonies for discharged patients, and eight refuges for incurables, making an aggregate of 236 institutions all engaged in combating tuberculosis in one way or another. The Red Cross Association and the Patriotic Women's Association have especially distinguished themselves by the energy and zeal with which they have taken up this work. The Red Cross Association alone has established half a dozen sanatoriums in different parts of the empire and also works in the homes of the people, advising and helping where necessary. Agencies giving advice and information with respect to the prevention of tuberculosis are numerous in Germany. At Mannheim in Baden there is a committee having a paid lady secretary who spends two hours each day in receiving the questions of sick people or their friends and these questions after being taken down on special forms are answered by medical men. The committee also employs a nursing sister to visit the homes of the tuberculous poor. To such homes bedding and other necessaries are supplied in case of need and food, such as milk, eggs, and meat, is also distributed. On this committee there are representatives of all the women's philanthropic agencies in the town and it has been liberally helped with funds by both the municipality of Mannheim and the State. Another excellent organisation of the same kind is the "Agency for Information, Advice, and Help for Sufferers from Lung Diseases" which has been established at Charlottenburg near Berlin by the Patriotic Women's Association.

The municipalities are likewise making systematic endeavours to cope with the disease. Berlin, Dresden, Munich, Leipsic, Aix-la-Chapelle, and some other large towns have established sanatoriums and isolation homes, whilst other municipalities have provided existing hospitals with special departments for the treatment of tuberculous patients. In Coblentz, Essen, Duisburg, Mülheim, Ruhrort, and Rees a special district tax is levied for the support of sanatoriums for tuberculosis. Where the ground has already been efficiently covered by philanthropic enterprise local authorities are willing to pay liberally for the right to share in the benefits offered. For example, the municipality of Königsberg in Prussia has made a ten years' compact with the Hohenstein sanatorium by which it acquires the right of filling five beds in return for a yearly subsidy of £200 and the option of sending additional patients at the rate of £45 each. The Poor-law authorities have not in general shown the same readiness to coöperate in the movement, the reason given being that as their funds are levied over small areas the cost has been found to be an obstacle. Nevertheless, the Federal Department, which acts in the place of the English Local Government Board in Poor-law matters, has ruled in one case of appeal that the treatment of tuberculous patients in sanatoriums may be regarded as falling within the province of the Poor-law authorities so long as these act on the advice of their medical officers. On the strength of this decision the city of Hamburg now hands over its tuberculous poor to suitable sanatoriums in cases where this treatment offers a reasonable chance of success. Berlin follows the same plan and also places at the disposal of persons of small means funds (in the aggregate £500 a year) assisting them to undergo treatment in sanatoriums without the aid of Poor-law relief. Special funds of the same kind have been formed at Munich, Essen, Darmstadt, and many smaller places, while a number of towns perform the same service at the public charge.

One of the most important branches of the work is that which is done by the insurance authorities—local associations appointed under the Industrial Insurance Laws for the purpose of assisting the working classes in cases of sickness and accident. These bodies have now for some years—especially in Hanover—employed a large amount of their accumulated funds in providing sanatoriums and in checking the ravages of tuberculosis in other ways, both preventive and remedial. Many of the insurance authorities have restricted themselves to advancing money at low rates of interest, the rate varying from ½ per cent. to 3½ per cent., but among those which have established institutions of their own are the central authorities for Berlin, Brandenburg, Posen, Hanover, Würtemberg, Baden, Hesse, Thuringia, Brunswick, the Hanseatic towns, and Alsace-Lorraine, and others are now imitating their example. Even some of the Railway Pension Fund committees and the trade unions (like that of the miners in Westphalia) have entered the same field. Among the means adopted in this national campaign against disease is the dissemination of popular literature amongst the working classes both in their homes and through the instrumentality of the elementary schools. The Prussian Ministers of Public Works, of Worship, and of the Interior have even joined in the issue of an ordinance to local authorities urging them to resort widely to this method of propaganda. Of one *brochure* 200,000 copies have been circulated in the public schools. Conferences of teachers are also held on the subject with a view to enlist their support, public lectures with lantern illustrations are arranged during the winter months, and last winter the central committee of the sick funds of Berlin held seven courses, each of five lectures, in different parts of the city, questions and discussions forming a regular part of the proceedings. In the metropolis, too, a tuberculosis museum has been established, rooms for the purpose being placed at its disposal by the Imperial Home Ministry in the "Permanent Exhibition for Workmen's Welfare" (*Ständige Ausstellung für Arbeiterwohlfahrt*) in Charlottenburg.

It is too soon to judge of the crusade by results, though the results already achieved are extremely gratifying. According to returns published by the Imperial Statistical Bureau, based on the work of Dr. Mayet, the mortality per 10,000 living caused by tuberculosis of the lungs in towns of 15,000 inhabitants and over was as follows:—1877–81, 357·7; 1882–86, 342·2; 1887–91, 304·0; 1892–96, 255·5; and 1897–1901, 218·7.

On the whole, the main portion of the working classes in Germany is fairly well provided with hospitals, sanatoriums, and shelters for tuberculous patients, thanks to the enterprise shown by the insurance authorities, and the needs specially felt at the present time are (1) a greater number of institutions for the reception of women who hitherto have not had their fair share of attention and (2) the

provision of institutions, to which, in return for moderate payment, patients belonging to the middle classes may resort. It is complained that between the 14,000,000 persons for whom the various insurance funds provide free treatment and the well-to-do class of people who can afford to pay for independent treatment at special institutions there is the large lower-middle class of people of restricted means to be numbered by the million who have to a great extent been overlooked by this modern crusade against disease. It has been suggested that, following the example of the industrial insurance organisations, the private insurance companies and corporations might enter this field of philanthropy if only from purely commercial and interested motives. Another lack is that of a sufficiency of institutions for the reception of the hopeless cases which, if allowed to remain at large, may act as centres of infection.

One of the measures to which the central committee is now devoting attention is legislation on the subject of compulsory notification of tuberculous disease. Already several states—Saxony, Baden, and Hesse—have enacted this precaution and while Prussia has so far held back a practically similar result has been obtained in many parts of the country by means of police ordinances. For example, in Wiesbaden a police edict requires medical men to report every case of tuberculosis of which they hear in the course of their professional work when there exists any danger of infection. The same provision exists at Frankfort-on-the-Main. In Berlin medical practitioners who attend cases of tuberculosis in hotels and lodging-houses must notify them within 24 hours. The central committee, however, aims at having notification made universal throughout the empire and to this end it is agitating for an Imperial statute. At present the committee will be satisfied with notification in the case of death from tuberculosis and of sickness in the event of a change of dwelling.

MERCURIAL POISONING OR ULCER OF THE STOMACH?

A *cause célèbre* which has occupied the attention of the Roumanian law courts for about a year and has recently come to an end presents several features of extraordinary interest both from a medico-legal and from a general medical point of view.

The case is that of a young medical man who was charged with the murder by poison of his young wife to whom he had been married about a year and the principal point round which the question of guilt or innocence turned was whether the corrosive sublimate, from the effects of which the victim was said to have died, was administered to her while alive or had percolated into the internal organs from the preserving fluid into which they had been placed after exhumation with a view to being examined. Whilst the former opinion was entertained by a number of authorities of the first rank, including university professors and well-known medical men, the latter was advanced by no less eminent men of science, including the well-known Professor Babes of Bucharest. The controversy between the two opposing medical groups became at times so acrimonious and personal that for the honour of the profession it is to be hoped such scenes will remain unparalleled, as they have doubtless hitherto been. This was probably due to the "confrontation method" of examining witnesses, which is in force in Roumania and which frequently assumes the character of a discussion between the witnesses with the judges, jurymen, and counsel interposing with questions as they think fit.

The points of accusation were as follows. The young medical man married a girl who brought him a dowry of 40,000 francs. This money being soon exhausted the accused effected a joint insurance on his and his wife's lives with two insurance companies for the amount of 50,000 francs. Shortly afterwards the young wife was taken ill and was attended in her illness by about half a dozen medical men who diagnosed the disease as anæmia and ulcer of the stomach. She died one night rather suddenly but was not seen by any other medical man except her husband until a few moments before she expired. The cause of death was certified as ulcer of the stomach and the body was buried in due course. At the funeral and shortly afterwards ugly rumours began to circulate that the medical man had poisoned his wife. This coming to the knowledge of the insurance companies and of the authorities the body was exhumed some few weeks after burial and subjected to a post-mortem examination. No ulcer of the stomach was found but 32 milligrammes of mercury and 13 milligrammes of arsenic were extracted from the gastric contents. A second and third analysis did not confirm the presence of arsenic. This was explained by the impurity of the reagents used at the first examination. On the other hand, a large quantity of mercury was detected in the walls of the stomach. The case became the exciting topic in the whole country and was sent to the Superior Sanitary Council (a sort of medical tribunal) for consideration. By a majority this authority decided in favour of the theory that the victim died from mercurial poisoning and the matter entered upon the stage of criminal prosecution. The defence was that the illness from which the deceased died could not have been chronic poisoning by mercury, as the attending medical men had never seen any of the classical symptoms of this intoxication—namely, stomatitis, salivation, and anuria. Nor could it have been an acute case of mercurial poisoning, seeing that the patient was taken worse during the night and had died within a few hours, whereas, according to Brouardel and other authorities, the shortest interval between intoxication and death is, as a rule, 24 hours, exceptions to this being very rare. Besides, the symptoms during the fatal night had not been such as to suggest acute mercurial poisoning only. There had been no pain but dyspnœa and vomiting, which are suggestive more of nephritis and uræmia. As a matter of fact, Professor Babes found when examining the kidneys signs of interstitial nephritis and also signs of ulceration of the stomach, though there was no evidence of a definite ulcer or of perforation. The opinion of the medical experts for the defence was therefore that death was not due to the action of the mercury, that there was at least room for doubt, and that it was impossible to say with certainty that the deceased had been poisoned. The mercury in the stomach might have come from the liquids used in sending the organs to and from the various laboratories, or it might have come from vaginal irrigations with sublimate solutions, it being known that the deceased had used such irrigations for some time after a miscarriage which she had a few months before her fatal illness. It was even suggested that the poison might have been poured into the organs designedly or negligently.

To these arguments the prosecution replied that the classical symptoms of mercury intoxication are occasionally absent, that it is not proved without a doubt that an acute intoxication may not end fatally in less than 24 hours, and that the organs had passed through the hands of responsible persons who had no interest in soaking them in sublimate. Moreover, even if so the poison could not have percolated into the deeper organs in such proportionate quantities, as the mercury was also found in the large intestine, the liver, the spleen, and other organs. The distribution must therefore have taken place through the circulation only, beginning with the digestive tract. As to the ulcerations of the stomach wall, they might be the result of the mercury poisoning, as might also be the case with the nephritis. The illness could not have been an ordinary ulcer of the stomach as there were no signs of perforation, and even as to the hæmatemesis the attending medical men had never seen the blood and had never spoken to the patient about it, but had placed reliance in this respect on the statements of the prisoner. To this the defence rejoined that, according to an experiment by Brouardel, mercury is diffusible post mortem through the whole organism, that the analysis had revealed comparatively large quantities of mercury on the skin and on a cloth in which the body had been enveloped, this being proof that the poison had proceeded from outside the body and not from inside. The gastric ulcerations and the nephritis could not have been due to the mercury as there would have been corresponding symptoms during life. The nephritis was quite sufficiently serious to have been the cause of death, although there was no perforation of the stomach, and as to the hæmatemesis it was immaterial to the issue whether anyone had seen the blood or not, as this is a symptom common both to ulcer of the stomach and to mercurial poisoning.

The case came for trial before a provincial assize court, when a new question arose—namely, whether mercury had been discovered in the bones of the deceased. It was thought that if that were the case it might be concluded that the poison had spread by means of the circulation and that would confirm the theory of intoxication. As the bones had

not been previously examined the trial was adjourned and the examination ordered. At first 450 grammes of bones were exhumed and subjected to the necessary analysis with the result that no mercury was discovered. The prosecution demanded a second analysis and a further quantity of bones were disinterred and examined. This time mercury was found in appreciable quantities. Meanwhile the trial of the case was transferred to the capital so as to insure greater impartiality. At this second trial, which lasted ten days, the whole of the arguments were gone through again, including the finding of mercury in the bones. While the prosecution advanced this as a proof of intoxication the defence and particularly Professor Babes held their ground that the mercury could not have come from anywhere else but the preserving liquids. Otherwise mercury would have been found in the brain and muscles as well, which was not the case. Much was also made of the circumstance that the first analysis of the bones revealed no mercury, while the second did. The defence also relied upon the fact that the body of the victim was in an extremely bad state of preservation, which would not have been the case had death been due to mercurial poisoning.

At this stage the trial assumed the form of an open battle between the principal medical experts. The presiding judge had several times to remind them that they were before a number of jurymen, several of whom, by the way, were medical men, and not before a learned medical society. Personalities were thrown to and fro to the ill-placed merriment of the public, and the divergence of opinion was so pronounced that there was no possibility of bridging it over. In the end the result of the trial was favourable to the prisoner. He was acquitted, the jury rightly refusing to take the responsibility on their shoulders when the leading medical experts were so widely divided. To the impartial reader of the medical evidence the case must remain a puzzle. There were, no doubt, many elements favouring the theory of murder but, on the other hand, even the prosecution had to admit irregularities in the course of the several medical and chemical examinations, so that if it be the correct thing to let ten guilty men go unpunished rather than punish one innocent one there was sufficient doubt in the matter to justify the verdict of acquittal. To the medical profession the case is of importance as it shows that the apparently easiest cases may meet with insurmountable difficulties in the hands of even the greatest authorities.

MEDICINE AND THE LAW.

The Risk of not Writing Prescriptions.

A RECENT law case referred to in *La Semaine Médicale* points to the desirability of a prescriber always committing his prescriptions to paper. A medical man was supplied with a corrosive liquid instead of a 1 per cent. solution of cocaine hydrochloride which he clearly ordered by a written prescription. The liquid was used for producing anæsthesia preparatory to extracting a tooth. The court held the prescriber to be absolved from blame, stress being laid on the fact that the prescription was given in writing. Cases of misadventure are fortunately rare, but when they happen it is satisfactory to be able to lay the blame on the author of the mistake. In the past it has been the general custom to write prescriptions but since the advent of the telephone it is obviously an easy thing for medical men to ring up the pharmacist who dispenses for them and to dictate their prescriptions. There would seem to be no undue risk of error in such cases if only the precaution be taken to request the pharmacist to repeat the instructions. It is open to doubt whether, from another point of view, this practice is, on the whole, a good one, since the act of committing a prescription to paper is more likely to be accompanied by calm and deliberate judgment than when a batch of instructions are hurriedly dictated through the telephone.

Section 14 of the Sale of Food and Drugs Act.

The division of the sample for the purpose of analysis into three parts has given rise to some difficulty in connexion with the administration of the Sale of Food and Drugs Act. In some instances a third part of the sample is barely sufficient for a complete analysis. The division, for example, of a sample of spirit is a case in point and the fact of purchasing a large sample is calculated in this instance to excite suspicion as to the motive of the purchase. An interesting point in connexion with this question of the division of the sample was argued in the Court of Appeal recently. A grocer was charged with having unlawfully sold to the prejudice of the purchaser four penny packets of cream of tartar which were not of the nature, substance, and quality of the article demanded, the analyst certifying that the cream of tartar contained lead in the proportion of three-quarters of a grain per pound. The inspector asked for four packets, which were all similar in size and in outward appearance and bore similar labels and were taken from the same box. The contents of the four packets were then mixed and the mixture was divided into three parts, one of which was sent to the county analyst and another to the seller, while the third was retained by the inspector. On the strength of the analysis a conviction was asked for but the justices dismissed the summons and the case came to the Court of Appeal for an opinion as to whether the justices were right in their action. The justices were of the opinion, apparently, that Section 14 of the Act had not been properly complied with since four separate purchases had been made, each packet being an article, and that mixing together the contents of the four packets and then dividing the substance so mixed into three parts did not accord with the requirements of the section. On the other hand, the prosecution contended that Section 14 had been properly complied with inasmuch as the entire purchase had been properly divided into three parts as the Act directed. The defence cited a case in which six bottles of camphorated oil were bought and it was held that "six bottles are six articles." It appears, however, that there was no division of the contents of any one bottle but two were sent to the analyst, two to the seller, and two were retained by the inspector. That was held not to be a compliance with Section 14, for it was obvious that the oil might be of different quality in different bottles. In the case of the packets of cream of tartar, however, they were all labeled in the same way and taken from the same box. The Lord Chief Justice decided that the case should go back to the justices to proceed in the matter. The appellant, he said, asked for cream of tartar which for the purpose of measurement was put up in penny packets. He asked for four packets and the court was asked to say whether because four packets of the same article labeled in the same way and sold at the same time as cream of tartar were mixed together and then divided into three parts that was a good objection to the analysis. He was of opinion that it was not a good objection and Mr. Justice Kennedy and Mr. Justice Ridley agreed.

Looking Back.

FROM

THE LANCET, *SATURDAY*, April 28, 1827.

Pharmacy in England.

In 1606, apothecaries and grocers were incorporated by 4 James I., but this union was dissolved in 1615, by charter, 13 same reign, which prevented Catholics from practising physic or pharmacy in England. This charter is confirmed (except as therein stated,) by the Act 55 Geo. III., c. 194, 1815, which was amended by 6 Geo. IV. 1825, an Act that continued but one year in force. The 55 Geo. III., now in force, is highly objectionable in many respects, for example, it commands the apothecary to keep none but wholesome drugs in his shop, so that all the active vegetable and mineral poisons, though highly efficacious in proper quantities, ought to be excluded; and yet there is a large fine, if any medicine in use, ordered by a physician, be not in the shop of the apothecary. Again, any man putting the words chemist or druggist, over his door, can act as apothecary with impunity; and still this Act is a paragon of perfection in comparison with the Irish Apothecaries Act, 31 Geo. III. c. 34, which in fact is a dead letter, for in that happy and well governed country, there are more irregular than regular apothecaries. In England the apothecaries must attend lectures on medicine and surgery, and hence called surgeon-apothecaries; they are the physicians of nine-tenths of the population, which in Ireland they practise

o the same extent, without ever attending any lectures on either subject: the mistakes of these men are really frightful and most extensive. Some of them attend lectures on midwifery, and then practise every branch of medicine. They generally attend in the most dangerous cases, and prescribe a variety of medicines, and after many days, when death stares them, they recommend that proper medical aid may be resorted to; the patients generally die, and all blame is ascribed to the physician, and none to the apothecary. Again, these men are constantly out prescribing, and their shops left to the care of school-boys, who make the most fatal mistakes. There is no inspection of such shops in the provinces, and hence the most inert and useless medicines are daily compounded for the most fatal cases. The 55 Geo. III. ought to be amended, and extended to Ireland.[1]

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 7916 births and 4664 deaths were registered during the week ending April 22nd. The annual rate of mortality in these towns, which had been 15·7, 15·7, and 16·6 per 1000 in the three preceding weeks, declined again last week to 15·6 per 1000. In London the death-rate was 14·9 per 1000, while it averaged 15·9 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·7 in Kings Norton, 7·2 in Newport (Mon.), 9·1 in Willesden, 9·2 in Burnley, 9·3 in Handsworth (Staffs.), 9·6 in Leyton and 9·9 in Hornsey; the highest rates were 20·3 in York, 21·0 in Hull, 22·3 in West Bromwich, 22·8 in Middlesbrough, 24·1 in Wigan, 24·3 in Tynemouth, 26·4 in Huddersfield, and 28·9 in Merthyr Tydfil. The 4664 deaths in these towns last week included 453 which were referred to the principal infectious diseases, against 433, 430, and 553 in the three preceding weeks; of these 453 deaths, 203 resulted from measles, 100 from whooping-cough, 50 from scarlet fever, 38 from diphtheria, 38 from diarrhœa, 21 from "fever" (principally enteric), and three from small-pox. No death from any of these diseases was registered last week in Hastings, Bournemouth, Handsworth (Staffs.), Kings Norton, Grimsby, Birkenhead, Rochdale, Rotherham, York, or South Shields; while they caused the highest death-rates in Southampton, Hanley, West Bromwich, Warrington, Oldham, Sheffield, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in Southampton, Reading, West Bromwich, Coventry, St. Helens, Wigan, Warrington, Oldham, Sheffield, and Merthyr Tydfil; from scarlet fever in Plymouth; from diphtheria in Hanley, Bootle, and West Hartlepool; from whooping-cough in West Ham, Ipswich, Hanley, Smethwick, and Middlesbrough; from "fever" in Huddersfield; and from diarrhœa in Hanley. Two fatal cases of small-pox were registered in Southampton and one in Oldham, but not one in any other of the large towns. The number of small-pox cases under treatment in the Metropolitan Asylums Hospitals, which had been 20, 21, and 15 at the end of the three preceding weeks, had risen again to 17 at the end of last week; six new cases were admitted during the week, against two, four, and none in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday last, April 22nd, was 2128, against 2032, 2086, and 2133 on the three preceding Saturdays; 253 new cases were admitted during the week, against 254, 292, and 290 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 273, 308, and 304 in the three preceding weeks, declined to 272 last week, but were 18 above the number in the corresponding period of last year. The causes of 69, or 1·5 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Bradford, and in 47 other smaller towns; the largest proportions of uncertified deaths were registered in Portsmouth, Birmingham, Smethwick, Aston Manor, Liverpool, St. Helens, Sheffield, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 16·9, 16·6, and 18·0 per 1000 in the three preceding weeks, declined again to 17·8 per 1000 during the week ending April 22nd, but was 2·2 per 1000 above the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 12·2 in Leith and 15·3 in Aberdeen to 24·4 in Perth and 26·0 in Greenock. The 597 deaths in these towns included 23 which were referred to measles, 23 to whooping-cough, 12 to diarrhœa, six to diphtheria, three to "fever," and two to scarlet fever. In all, 69 deaths resulted from these principal infectious diseases last week, against 43, 73, and 69 in the three preceding weeks. These 69 deaths were equal to an annual rate of 2·1 per 1000, which was 0·6 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of measles, which had been five, 13, and 17 in the three preceding weeks, further rose last week to 23, of which 17 occurred in Glasgow and six in Edinburgh. The deaths from whooping-cough, which had been 20, 28, and 36 in the three preceding weeks, declined again to 23 last week, and included 15 in Glasgow, three in Dundee, two in Leith, and two in Greenock. The fatal cases of diarrhœa, which had been 20 and nine in the two preceding weeks, rose again last week to 12, of which four were registered in Edinburgh, three in Glasgow, two in Dundee, and two in Leith. The six deaths from diphtheria corresponded with the number in the preceding week and included three in Edinburgh and two in Greenock. The three fatal cases of "fever" occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 105, 119, and 121 in the three preceding weeks, further rose last week to 126, and were 11 in excess of the number in the corresponding period of last year. The causes of 19, or more than 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 24·9, 25·5, and 21·6 per 1000 in the three preceding weeks, rose again to 23·4 per 1000 during the week ending April 22nd. During the past four weeks the death-rate has averaged 23·9 per 1000, the rates during the same period being 15·5 in London and 16·2 in Edinburgh. The 170 deaths of persons belonging to Dublin registered during the week under notice were 13 in excess of the number in the preceding week and included 12 which were referred to the principal infectious diseases, against eight, five, and eight in the three preceding weeks; of these, four resulted from measles, four from whooping-cough, three from diarrhœa, and one from diphtheria, but not any from small-pox, from scarlet fever, or from "fever." These 12 deaths were equal to an annual rate of 1·7 per 1000, the death-rates last week from the principal infectious diseases being 1·3 in London and 2·2 in Edinburgh. The fatal cases of measles, which had been four, none, and four in the three preceding weeks, were again four last week. The deaths from whooping-cough, which had been one and two in the two preceding weeks, further rose last week to four. The fatal cases of diarrhœa, which had been two, two, and none in the three preceding weeks, increased to three last week. The 170 deaths in Dublin last week included 34 of children under one year of age and 48 of persons aged 60 years and upwards; the deaths of infants were 15 above the number in the preceding week, while those of elderly persons showed but a very slight excess. Eight inquest cases and four deaths from violence were registered; and 66, or more than a third, of the deaths occurred in public institutions. The causes of nine, or more than 5 per cent., of the deaths registered in Dublin last week were not certified.

[1] Excerpt from a special article entitled "An Account of the Laws relating to Medicine, Surgery, and Pharmacy, in the United Kingdom; with Observations on the Rights, Privileges, Abuses, and Defects, in each Profession, proving the imperious necessity of further Enactment, for the consolidation of the various Charters and Statutes connected with these Professions, for rendering same more complete, and better adapted for the conservation of Public Health," dated March 28th, 1827, and signed "Hygeiaphilos."

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned Surgeons have been promoted to the rank of Staff Surgeon in His Majesty's Fleet, viz. :—Cecil Howard Rock (dated May 15th, 1903); Herbert Hope Gill (dated Nov. 12th, 1903); and Alexander Thomas Wysard (dated May 13th, 1904).

Fleet Surgeon A. Cropley has been placed on the Retired List (dated April 22nd).

Staff Surgeon Montagu L. B. Rodd is appointed to the Royal Naval Hospital, Stonehouse, from May 8th.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel A. T. I. Lilly is appointed to the Eastern Command. Colonel F. Howard is appointed president and Major J. Girvin, Major W. W. O. Beveridge, D.S.O., and Major T. W. Gibbard members of a medical board for the examination of candidates for commissions in the Militia and Imperial Yeomanry.

SIR JAMES HANBURY, K.C.B.

The Distinguished Service Pension vacant by the death of Surgeon-Major-General T. Walsh has been conferred on Surgeon-General Sir James A. Hanbury, K.C.B., retired. Sir James Hanbury's services in the Afghan War, 1878–79–80, and in the Egyptian campaign of 1882 are well known. As regards the latter expedition it will not be forgotten that the medical arrangements gave rise to a Government inquiry by Lord Morley's committee and to the publication of a big blue-book thereon. There was never an occasion, if all the circumstances and exceptional conditions of that expedition be taken into account, on which the Army Medical Service rendered better or, judging from the results, more successful service than in the Egyptian campaign of 1882 and this was, we believe, the opinion formed by every impartial and competent reader of the evidence and report published by the War Office committee at the close of its inquiry. As principal medical officer of the Madras command, a post which he held before his retirement in 1892, Sir James Hanbury fully maintained his reputation and the respect in which he had always been held.

ADMIRAL SIR A. W. MOORE, K.C.B., C.M.G., AND THE EGYPTIAN WAR OF 1882.

The recent notification by the Admiralty of Vice-Admiral Sir A. W. Moore's appointment as second in command of the Channel Fleet recalls to mind the services which this officer rendered in the Egyptian war of 1882 when in command of the naval flotilla on the Sweet Water canal in connexion with the transport of the sick and the wounded. Admiral (then Commander) Moore was present at the occupation of Ismailia and the battle of Tel-el-Kebir and was responsible for the organisation and management of the naval flotilla designed for the transport of stores to the front and for the conveyance of the sick and wounded to the base. In both respects very timely and efficient aid was afforded to the medical service. It may be safely said that never, perhaps, were wounded men more safely and comfortably conveyed to their destination from the immediate vicinity of a battle-field (Tel-el-Kebir) than on the occasion in question.

THE WOUNDED IN MODERN NAVAL WARFARE.

It seems certain that a serious battle will soon take place between the Japanese and the Russian fleets in Eastern waters. In all probability the losses on both sides will be very heavy. The greater part of Admiral Rojdestvensky's fleet has left Kamranh for somewhere unknown at the present moment to meet its Japanese enemy, whose exact position has not yet been revealed. It is not too much to say that the result of any engagement of the fleets in "being" is universally awaited with extreme interest, for under existing conditions there is so much to be learned and not least so in regard to the best naval medical arrangements that can be practically adopted in the circumstances. Writing last year in the *Deutsche Revue* Vice-Admiral D. Paschen of the German navy lays down the law from a combatant's point of view regarding the manner in which men who are wounded in the naval engagements of the future should be treated. On help for wounded men in a sea fight much, he says, has been written and much has been said. When, however, anyone is called upon to explain the actual state of the question it is still necessary to lay stress on the fact that no serious treatment of wounded men can be undertaken until after the combat is over. During the action the injured, save for such aid as their comrades can afford them, must be entirely abandoned for as long a time as the circumstances may demand. The commander of a warship is compelled to look upon wounded men as a hindrance and for this reason alone he would be anxious to get rid of them as soon as possible even if he were not naturally desirous that they should have the same advantages as those who sustain injuries in battles on land. Unfortunately, the conditions under which naval warfare occurs do not favour this; on the contrary, they are most unfavourable. All civilised States have provided hospital ships for service on the high seas in the event of war, but according to the best authorities it is absolutely necessary that these vessels should keep well out of the way as long as active hostilities are in progress. Even if a suspension of hostilities should take place it would not be possible to allow a hospital ship to intervene between the combatants. The issue at stake must be decided one way or the other before officers in command can permit themselves to think of anything else. So long as war continues upon this earth we have to look upon battle as the sole means of securing peace. Anything that interferes with the proper conduct of a battle would in all probability give rise to a hundred times as much pain and suffering as were for the moment relieved. Commanders can only think of how they can best conduct their battles to the bitter end. They cannot allow themselves the luxury of humanity. Of course, none would commit superfluous acts of cruelty, but, on the other hand, no merciful precepts can be allowed to jeopardise the issue of an engagement. It is quite impossible to do as much for wounded men at sea as it is on land. On the field of battle stretcher-bearers can go under fire if they choose to do so; it is simply a question of personal courage. Their presence at the fighting line does not interfere with the fighting and the fighters do not interfere with them. We have no recent experience of a naval battle on a large scale but having regard to their high rate of speed the area covered by war-vessels during an engagement will inevitably be very large and the zone outside which neutral ships have to keep must be correspondingly wide. Should a neutral vessel attempt to afford aid during a battle to a damaged man-of-war it would probably find itself inside the danger zone just when it was about to commence work. In such a case no commander would let mercy interfere with his manœuvres and no State is consequently able to guarantee the inviolability of hospital ships. For their own sake these vessels must keep completely out of the way and be especially careful to avoid the risk of capture by the enemy. Admiral Paschen lays down the rule that the fall of the flag, indicating the unconditional surrender of a warship, may be taken as a signal that hospital ships are free to approach the scene of action, but a little further on he adds that free access for neutral vessels is only permissible when the commander of the victorious fleet is of opinion that there is no danger of his prizes being recaptured. The post of the officer in charge of a hospital ship is, indeed, full of difficulty. He and his crew have to be sailors as well as medical men and must excel in both capacities. Admiral Paschen next describes the circumstances of the wounded on board a warship in action. Light and air, he says, can only be obtained by renouncing the protection afforded by the armoured portion of the vessel and yet it is here that such dressing as is possible during a battle must be carried on. Behind armour plates the wounded and their attendants are safe from the missiles of the enemy and have only to encounter general risks such as explosion and foundering. But with all the boilers in activity and every aperture hermetically closed the horror of the situation can be imagined, especially if, as is most probable, the electric light has gone out. Wounded men can only be moved during the pauses in an engagement. They have for the most part to remain a long time in the places where they were injured. It is therefore of the utmost importance that the crews of men-of-war should be taught the elements of practical surgery and especially how to stop bleeding. In conclusion, Admiral Paschen gives a historical account of the various conventions and leagues which have for their object the alleviation of the preventable hardships which are a blot upon naval warfare.

THE WAR IN THE FAR EAST.

There is one point which calls for notice at the present

time and before the subject of the capture of Port Arthur is finally relegated to things of the past. The *Times* of April 20th gives some very startling facts and figures, extracted by its correspondent at Tokio from the official record of the capture of that fortress. It seems that the number of serviceable guns was 528 and that the stores of ammunition and food-supplies were enormous. The prisoners included 41,641 combatants, of whom some 15,307 were sick or wounded. To a soldier it must appear astounding that Port Arthur surrendered in such circumstances. Looking back on the Boer war Sir George White's garrison at the time of the relief of Ladysmith had only food-supplies (such as these were) for 48 hours, if we remember aright, and the troops bore the unmistakeable marks of a more or less chronic state of starvation.

The *Novoye Vremya* has published some interesting impressions gathered from members of the Russian medical staff who were left behind at Mukden and were sent by the Japanese into the Russian lines. The sanitary condition of the Japanese troops was good and the men had stood the cold well. They were all well clad. The Russians found that nearly every Japanese officer knew either their own language or a foreign one, generally English, while the Japanese medical staff were familiar with German.

Correspondence.

"Audi alteram partem."

THE CAUSATION OF LEPROSY.

To the Editors of THE LANCET.

SIRS,—I see that in THE LANCET of March 11th Mr. Jonathan Hutchinson is using some remarks of Dr. Armauer Hansen to back up his theory that leprosy is not contagious. I cannot, just at present, obtain the article from which the extracts are taken, but judging from letters I received from Dr. Hansen some time ago, I am under the impression that Mr. Hutchinson is deducing a great deal more from Dr. Hansen's article than was intended by the author. I do not wish to discuss the question of the contagiousness or otherwise of leprosy. I believe it is contagious and Dr. Robert Koch told me a few months ago that in the Baltic provinces of Germany, where lepers are scarce, it was easy to trace infection from case to case. Mr. Hutchinson, believing that leprosy is not contagious, would do away with all leper asylums. He speaks of "those who are responsible for the miseries of Molokai and Robben Island." Of the condition of affairs at Molokai I knew nothing. Of Robben Island I do. I have spent more weeks on that island than Mr. Hutchinson has hours and am in a far better position to offer an opinion on it than he is.

I maintain that, apart from the suffering inevitably caused by the disease, the use of the word "misery" as applied to Robben Island is misleading. Even if Mr. Hutchinson were able to prove conclusively that leprosy is not contagious, that certainty would not do away with the necessity for such places as leper asylums. In the vast majority of cases, especially outside asylums, a time comes when the leper is unable to support himself and, speaking from a wide knowledge of the social and financial position of lepers in South Africa, very few of them possess sufficient means to support themselves. To do away with leper asylums would imply starvation and misery to most of these unfortunate people. Lepers sometimes escape from the Pretoria Asylum, return to their kraals, and after a longer or shorter absence are either captured or, and this is by no means infrequent, return of their own accord. On readmission their condition has always proved to be very much worse than when they left. A fortnight ago a white leper returned to the asylum. He escaped on Nov. 30th, 1904, and went to the farm of a relative in the Spelonken. When he left he was well able to do a good day's work. On his return, after little more than three months' absence, he had altered so much for the worse that at first I could hardly credit it was the same man and he had to be brought to the consulting room in a barrow. Since these poor creatures are unable to provide themselves with food, still less the medical attention so essential to them, it must be provided by the State, and the State can only provide for their wants efficiently and economically by means of asylums.

It must be taken into consideration that those who are able to provide for themselves are not compelled to enter an asylum, at least, not in this colony. I have this morning received a visit from a former patient; the disease in his case has been arrested and as he has means he lives on his own farm. On the other hand, there are several arrested cases in the asylum at this time; I should be glad to get rid of them but I cannot turn them out to starve. They are not dangerous but though in good health are so mutilated that they cannot work. Leper asylums will, I am afraid, be necessary for some time to come, just as lunatic asylums. No one would select either of them as a place of residence, but the comfort of those who are compelled by circumstances to enter them is not enhanced by reckless assertions which imply that they have been needlessly inconvenienced.

I am, Sirs, yours faithfully,

GEORGE TURNER,
Medical Officer of Health of the Transvaal; Resident Medical Superintendent of the Pretoria Leper Asylum.

Pretoria, April 2nd, 1905.

THE TENURE OF PUBLIC HEALTH APPOINTMENTS.

To the Editors of THE LANCET.

SIRS,—The accounts which you gave in THE LANCET of April 15th of the treatment of two medical officers of health ought to be enough to convince the strongest opponent of the Public Health Bill (security of tenure of office) of its necessity. Dr. F. T. Bond's treatment is simply a scandal and must surely open the eyes of the public to the need of reform. The Local Government Board has now been placed in an extremely awkward position by the defiant attitude of the Chipping Sodbury district council in electing a local practitioner in opposition to the strongly worded advice of the Board. The officials at Whitehall may be trusted to act justly in the matter but they must see that the recurrence of such incidents may at any time occur unless steps are taken to prevent it by giving us security of tenure of office. If they knew, as I do, of the intolerable position in which many medical officers of health in rural districts and small towns find themselves they would not hesitate for a moment in helping forward our Bill.

I am, Sirs, yours faithfully,

April 22nd, 1905. HERBERT JONES.

THE RECENT DISCUSSION ON CANCER IN BERLIN.

To the Editors of THE LANCET.

SIRS,—I shall be greatly indebted to you for your courtesy in permitting me to notice in your pages certain items of the recent discussion on cancer which took place in Berlin on March 8th, 15th, and 22nd.[1] The following remarks will be restricted to the contributions made to the debate by Dr. L. Pick, Professor F. Blumenthal, and Professor D. von Hansemann. Dr. Pick spoke chiefly of chorio-epithelioma and of the comparisons which may be made, and which, indeed, have already been discussed by me in your pages, between ordinary cancer, chorio-epithelioma, and the phenomena which take place in the early history of the trophoblast of normal gestation. He showed the gradual passage from ordinary chorio-epithelioma and he demonstrated that in some cases of the former certain portions of the tumour exhibited the structure of an ordinary carcinoma. In fact, Dr. Pick's researches furnish a new proof, *from the pathological point of view*, of the truth of the statement that cancer is an irresponsible trophoblast. In reply to Dr. Pick's remarks, Professor von Hansemann again referred to the recent finds of Schmorl.[2] The supposed import of these discoveries is, however, easily disposed of. The objections raised are: (1) That, as Schmorl found in the lungs of women in advanced pregnancy or shortly after birth, "normal" trophoblast or chorion exhibits no powers of indefinite growth, and (2) that these powers are manifested only by "pathological" trophoblast, such as occurs in hydatid mole. But the results of embryological research of the past 15 years, the work of Hubrecht, van Beneden, Hill, Duval, myself, and others,

[1] For full report see Berliner Klinische Wochenschrift, Nos. 12-15, 1905.

[2] Verhandlungen der Deutschen Pathologischen Gesellschaft, Jahrgang 1904, Heft 2, pp. 39-46.

place Schmorl's finds in another light. The chorion or trophoblast of mammalian development is a thing which is not embryonic but pre-embryonic in origin,[3] and which normally has a very short life. The period of its functional activities, as I demonstrated some years ago, varies but is a fixed time for the species: it is 15 days in the rabbit, 22 in the cavy, from 28 to 30 in the sheep, and from 45 to 47 days in man, &c. From this period, the critical period of my researches, it begins to degenerate under the influence of the altered, now pancreatic, digestion and *at or near the close of a normal gestation in man there is no such thing as "normal" trophoblast*. Months before that time it had entered upon its long slow course of degeneration. Hence Schmorl's finds have no bearings upon Dr. Pick's (or my) conclusions but they are quite in accord with, and indeed might have been predicted from, my work[4] of years ago. But in three cases *out of the early days of gestation* Schmorl found that the trophoblast exhibited the characters of unlimited growth—i.e., instances of pre-critical or critical abortions, &c. Here we have to deal with what Professor von Hansemann terms "pathological" trophoblast. But it is only "pathological" in the senses that "the embryo" is absent or aborted and that the trophoblast still retains all those powers of erosion and of unlimited growth which indeed characterise the pre-critical trophoblast of normal gestation. No new powers have come to it; there has been no change in its properties; it has simply not commenced to degenerate, for the change of nutrition of normal gestation is lacking in the absence of a completed embryo.

Professor Blumenthal's finds concern the chemistry of cancer. As he stated, in their essentials they have been made independently by Neuberg, Wolff, and Bergell in Berlin. They confirm and extend my recent conclusions in other directions. Briefly, they have found that: (1) the substance of cancer cells is quite different chemically from that of somatic cells; (2) the pigment of melano-sarcoma is not the same as any pigment occurring in the normal body; (3) cancer cells contain much albumin and little globulin; (4) substances are present in cancer cells which hitherto have not been found in the healthy body; (5) the cells of cancer are much more delicate and they are more easily destroyed than cells of normal tissues; (6) pepsin attacks cancer cells with difficulty, *while trypsin easily and quickly dissolves them;* and (7) a ferment occurs in cancer cells, that first described by Eugen Petry, which possesses the property of digesting not only the albumin of its own cells but it can also completely dissolve all the cells of the body, while ordinary somatic cells contain a ferment which can auto-digest the albumin, &c., of these cells alone. Add to these, that in a more recent writing in No. 15 of the same journal (p. 443) Professor Blumenthal mentions that this cancer ferment is intracellular, and it is possible to maintain that the above results furnish as strong a support of my standpoint as could be desired. It would seem to follow from these researches that trypsin, perhaps better when aided by other secretions poured out into the intestine, as Dr. John A. Shaw-Mackenzie has suggested, can destroy the cancer ferment malignin.[5] In the ferment malignin, discovered by Petry, we have a substance which can erode and dissolve practically any normal tissue of the body. The only other known normal cells which possess these powers are the cells of the pre-critical trophoblast (or the same cells in hydatid mole or in chorio-epithelioma). One small piece of chemical research alone remains to be made to complete the chain. This is to discover the like ferment, malignin, within the cells of the normal trophoblast of early gestation. I am absolutely sure of its existence there, for without this ferment the cells of the trophoblast could erode neither their way into the maternal tissues nor through the walls of the oviduct in a tubal gestation, nor could they do any of the other things which, on occasion, like the cells of an ordinary cancer, they can effect. A very interesting and important portion of Professor Blumenthal's speech was devoted to the cancer-cachexia. He has concluded that this heterolytic intracellular ferment, malignin, can auto-digest in the body the cancer cell; thus the ferment can become freed, get into the circulation, and so by its activities cause untold destruction in other parts of the body.

The etiology of carcinoma as an irresponsible trophoblast received confirmation from the cytological side from the researches of Farmer, Moore, and Walker; it is now strongly reinforced from the pathological side by the results of Dr. Pick. The embryological solution of the cancer problem, to all appearance, would also be the physiologico-chemical one, for trypsin can dissolve the cancer cell with ease and it would appear to destroy the cancer ferment too. For some time now in many countries and by many investigators attempts have been made to find a "serum" capable of dissolving the cancer cell. It is, perhaps, not too much to say that these have all been in vain. In your pages of Feb. 4th, 1905, I stated that trypsin was this substance; on Feb. 11th Dr. Shaw-Mackenzie independently confirmed this and for other reasons; and now Blumenthal, Bergell, Neuberg, and Wolff all independently state that while the cancer ferment malignin can dissolve any somatic cell the cancer cell is easily destroyed by trypsin. So that now the import of trypsin, alone or aided by substances which increase its action, would appear to be indicated in the medical treatment of cancer by the researches of six different observers, Blumenthal, Bergell, Neuberg, Wolff, Shaw-Mackenzie, and myself. As a corollary to these may be cited the finds of Professor B. Moore and colleagues,[6] which to my mind go to prove that cancer-cells take from the blood for their own purposes those substances from which the organism usually forms hydrochloric acid in aid of its gastric digestion.

I am, Sirs, yours faithfully,

April 16th, 1905. J. BEARD.

[3] In the pregnant uterus of the armadillo, Praopus hybridus, now in my possession, there are seven well-formed identical fœtuses within the one chorion. The latter was there before any of the seven and they arose within it by the independent development of seven single cells.

[4] For reasons of fact and embryology, which cannot be given in brief words, it may be concluded that chorio-epithelioma, notwithstanding the few apparently but not really well-established cases, is never a sequel of, and cannot follow the close of, a normal gestation.

[5] Dr. G. Cooke Adams, in his articles in THE LANCET of Feb. 13th and 20th, 1904, spoke of "malignic acid." To distinguish the cancer ferment from pepsin, trypsin, secretin, &c., I now suggest the convenient and natural name of "malignin."

THE TREATMENT OF FOLLICULAR CONJUNCTIVITIS.

To the Editors of THE LANCET.

SIRS,—Of late a high authority has stated that follicular conjunctivitis can scarcely be called a disease on the ground that its microscopical appearances are apparently identical with the structure of the follicles in lymphatic glands. Whatever the anatomical appearances may suggest there are two facts incompatible with this view—viz., the disease is contagious and responds most promptly to treatment. In the Croydon municipal schools the disease was very common but in two years we have reduced the number of cases by at least one half. The fact that the disease is contagious must not be construed as implying that it is necessary to exclude the children who have it from the schools. It would be going too far to say that the disease is innocuous. It was held for many years that these cases were predisposed to granular ophthalmia and not improbably this is true, for the conjunctival tissues being enfeebled by a very chronic inflammation must surely have diminished powers of resistance, and the hypothetical reason why the disease does not oftener pass into the more serious granular type is because the contagion of the latter affection is fast vanishing from the schools and, indeed, from the community at large. In the Croydon schools, containing 25,000 children, we have succeeded in reducing the cases of granular ophthalmia to about three. It is clear, therefore, in this instance that there is little chance of any of the follicular cases being exposed to the danger of infection with trachoma.

When a child is found to be suffering from follicular conjunctivitis our routine is (*a*) to inform the parents that the child has a contagious disease of the eyes; (*b*) to urge them to see that the child never touches his eyes without washing his hands afterwards; (*c*) that children can attend school provided that they are supplied with a saucer and lotion to wash their fingers with in the event of their touching their eyes; and (*d*) that the child will require a little attention at the hands of their medical attendant, or if this is not expedient at the eye department of a hospital. In severe cases occurring in more well-to-do children

[6] B. Moore, W. Alexander, R. E. Kelly, and H. E. Roaf: On the Absence or Marked Diminution of Free Hydrochloric Acid in the Gastric Contents, in Malignant Diseases of Organs other than the Stomach, Proceedings of the Royal Society, London, March 16th, 1905. (A full abstract of this paper is published in THE LANCET this week.—ED. L.)

a note is sent to the medical attendant advising the treatment with cocaine, argyrol, and adrenalin. In practice several varieties of the disease occur. The simplest is that so often found after using unsterilised atropine drops for considerable periods. This rapidly subsides on discontinuing the drops and seldom calls for active treatment. In another variety, the commonest, the follicles are few in number and the conjunctiva is slightly, if at all, reddened. In a third variety for which the line of treatment outlined below was designed the follicles are exceedingly numerous, red, and opaque. Several such cases I have followed for over a year, and under the ordinary routine of hospital treatment, so far as I could see, they did not improve in the least.

Whatever the variety the following treatment seems infallible. The follicles are painted with cocaine and the lids are held from the eyes. After the drug has been absorbed the follicles are crushed and emptied by trituration and pressure between the two thumb-nails, one nail being next the conjunctiva and the other outside the lid. The third step is to paint the diseased part where the follicles are with argyrol, 20 per cent. After giving the membrane sufficient time to absorb the drug—say, a couple of minutes—the argyrol in the tissues is fixed there by painting on a little adrenalin, 1 in 1000. Cocaine should not be instilled in the ordinary way or the cornea would certainly be damaged irretrievably by the powerful silver salt. The sole object in using the adrenalin is to prevent the blood and lymph from washing away the germicide before it has done its work thoroughly. Two most inveterate cases were cured in three weeks; they were by far the worst cases I have ever seen. The treatment has been mostly in hospital but several practitioners have carried it out in their surgeries with equal success. For home use the patients are ordered lot. hydrarg. cyan., 1 in 10,000, with instructions to wash the eyes with the lotion by means of cotton wool. A little of the lotion is allowed to go inside the eyes but not enough to cause smarting or pain, the idea being that it is better to have a small quantity at work for a considerable time than to use it in such a quantity as will provoke a rush of tears and therefore prompt removal of the irritant. A bland ointment is used at times for the edges of the lids at night, but when it is ordered the patient is warned that it may disagree, and he is advised to discontinue if it causes the lids to be very red in the morning. The paintings are done about every other day.—I am, Sirs, yours faithfully,

CHARLES WRAY, F.R.C.S. Eng.,
Surgeon to the Western Ophthalmic Hospital; Ophthalmic Surgeon to the Croydon General Hospital and Croydon Council Schools.

April 19th, 1905.

IF TUBERCULOSIS SHOULD BE CERTIFIED, WHY NOT SYPHILIS?

To the Editors of THE LANCET.

SIRS,—Dr. E. H. Douty's letter in THE LANCET of April 8th, p. 956, raises a question which must often present itself to the mind of the medical man. May I attempt to give an answer to it and the reason of the answer, premising first of all that in order to know how to prevent syphilis it is not enough to have made a study of syphilis; it is necessary also to have made a study of the means of preventing it. The answer is, that we do not certify syphilis because we wish to prevent its spread, not to increase it. It is very natural, and sounds very logical, to argue from tuberculosis to syphilis; but the analogy is verbal and not practical, for there is one deep-lying difference which vitiates the whole argument. The two diseases which Dr. Douty invites us to certify are in their nature the most concealable of diseases and they are diseases which there is the strongest possible motive for concealing. To make them notifiable—that is, if it means anything at all, to make them liable to compulsory detention and treatment—is to add a fresh and powerful motive for concealment without adding in any appreciable degree to its difficulty.

I am not speaking without warrant. If Dr. Douty would turn to the reports and communicated papers of the International Society "Pour la Prophylaxie Sanitaire et Morale," of which the French Society he refers to is an offshoot—volumes which certainly ought to be found on the shelves of every medical library—he would find this subject discussed from every point of view, would find the very greatest anxiety on the part of medical men to introduce notification as a means of ensuring treatment, and would find them constantly recognising at the same time that to introduce such a measure is to drive the patient away from the medical man who will notify him to the quack who will not, or to nostrums with which he can treat himself, and that the measure is therefore worthless unless accompanied by the most drastic provisions for the discovery and dragooning of these patients—provisions either ludicrously incapable of application or which have been applied again and again with the same result, the continued increase of disease. The result of long experience on the continent comes to this, that compulsory treatment, while it fails to "stamp out" syphilis, does stamp out voluntary treatment in any class to which it is applied. Accordingly, in Italy, where they have now established a vast system of gratuitous treatment, they are doing away with compulsory treatment even of the lowest class of woman in the belief that the voluntary system will prove more efficacious. In England, on the other hand, the Physical Deterioration Committee of last year, adopting the view expressed by Sir Victor Horsley and some others, recommended an inquiry with a view to two measures—notification and the provision of gratuitous treatment.

Now it is obviously of the greatest importance that there should be adequate provision for the treatment of these patients and every inducement to seek it, and the fact of such provision being made by the State would doubtless attract patients and make early and prolonged treatment much more common; but to introduce at the same time a measure like notification with its necessary corollary of compulsory detention or supervision is precisely the way to drive the willing patient from the doorstep and make the outlay incurred in providing gratuitous treatment a mere waste of public money. Those who advocate these measures have not considered what they mean from the point of view of the patient. They mean that from the first confession of syphilis the patient ceases to be a free agent and we may be very sure that where this is the case the confession will not be lightly made. I am not without sympathy for the impatience of medical men who, like Dr. Douty, see this scourge raging around them and are ready to seize on any weapon which seems to offer the means of combating it. But experience proves that this is a matter in which it is fatally easy to make things worse in trying to make them better. Bad as things are at present, they are in England, by every test that can be applied, steadily becoming less bad, and however desirable it may be to hurry improvement it is still more desirable not to risk checking it.

As to sanatoriums for syphilitics, while fully recognising the value of fresh air in these cases it has to be remembered that people of the comfortable classes can get fresh air without sanatoriums and that people of the not-comfortable classes mostly have families to support. Sanatoriums, whether for tuberculosis or syphilis, can afford only a very limited remedy and it seems almost like a satire on our civilisation to take here and there one out of our overcrowded, underfed, and drink-sodden population, feed him up for a few months with good food and fresh air, and then send him back to the old conditions. The garden city and the farm colony are surely a truer prophylactic. As to education, the continental experts are absolutely agreed. It is the first thing to be done. With your permission I should like to say a few words on this subject in another letter.

I am, Sirs, yours faithfully,

B. LEPPINGTON,
Member of the International Prophylactic Society.

Oxford, April 10th, 1905.

SHOCK AND COLLAPSE.

To the Editors of THE LANCET.

SIRS,—Dr. C. Powell White in his letter in THE LANCET of April 15th, p. 1029, says that I have produced no evidence that increased atmospheric pressure is of value in the treatment of shock and that the statement rests upon my assertion alone. He has evidently not read my lectures very carefully or he would hardly make such a statement. A series of careful experiments to prove this point were carried out by Crile and are referred to in my second lecture on p. 782. The experiments themselves are recorded in Crile's book, "Blood Pressure in Surgery." Dr. White asks me to explain how the vaso-motor system is able to compensate for variations in external pressure. I thought I had already explained this in my lectures. Compensation is obtained by alterations in the calibre of the blood-vessels—that is to say, the vaso-motor centre compensates for external influences by altering the capacity of

the circulation. Dr. White in his last letter says that localised external pressure by altering the distribution of the blood will cause the blood pressure to be increased and argues from this that the phenomenon is a purely physical one. I do not, however, agree with this statement.

In a normal individual localised external pressure will *not* cause any rise in the blood pressure, as the vaso-motor centre at once compensates for any alteration in pressure which tends to take place. Thus compression of the abdomen in a healthy person causes little or no alteration in the blood pressure, while the same amount of compression in a patient suffering from shock will result in a considerable rise in the blood pressure. I would suggest to Dr. White that he should carry out a series of experiments to test the value of his assertions. I am sure that he will agree with me that arguments not based upon experiments are of little value in discussions on morbid physiology and I believe that if Dr. White carries out such experiments he will not long hold his present views. Many of the problems in relation to the blood pressure in health and disease which have been touched upon in this discussion give ample scope for further investigation along experimental lines. I do not think that arguments unbacked by experimental proof can be of much value and I trust that Dr. White will aid the cause of morbid physiology by testing his ideas by experimental research.

I am, Sirs, yours faithfully.

Cavendish-place, April 17th, 1905. P. LOCKHART MUMMERY.

POISONING BY THE WASTE GASES OF THE MOTOR-CAR.

To the Editors of THE LANCET.

SIRS,—In the course of the last few years the public has been brought in contact with the petrol engine as a result of the latter being adopted for road traction. I have seen no mention in the medical or motor papers, nor I am sure are owners of cars and their mechanics aware of the danger of inhaling the waste gases. That this danger is a serious one the following instance will demonstrate. In a room of about 2000 cubic feet capacity, the doors and windows of which were closed, four men for the space of 20 minutes were engaged in testing an eight horse-power engine, which they allowed to run and to rest for alternate intervals of two minutes and one minute respectively. Before the completion of the trial two of the men went out complaining of "feeling bad" and had nausea; their fellows who persevered with the trial were subsequently sick and all four complained of violent headache, throbbing of the temples, and of a feeling as though their heads would burst. All were able to resume work the following morning, but one came to see me some two or three days later with recent and marked anæmia, and although previously in perfect health developed in the course of a few days a large carbuncle. The symptoms I have narrated seem to point to poisoning by carbon monoxide and should act as a warning to others.

I am, Sirs, yours faithfully,

Wimbledon, S.W., April 17th, 1905. W. B. WINTON.

THE "CURE" OF CANCER.

To the Editors of THE LANCET.

SIRS,—Many surgeons will regret to read the somewhat pessimistic article under the above heading published in THE LANCET of April 15th by Mr. Edmund Owen. Looked at with the "cold and unemotional eye" of surgery it is literally true, but most, I think, will agree that Mr. Owen is unduly sensitive when he is unable to satisfy himself of having cured the case he quotes (the nature of which, by the way, he does not state was verified by microscopical examination), notwithstanding that the patient has remained free from recurrence for over a quarter of a century. There is a good deal in medicine and surgery which is incapable of absolute mathematical demonstration and it is obvious on Mr. Owen's argument that no case of cancer could ever be claimed to have been cured by operation, because if the patient lived to 100 years and passed 50 without a recurrence, dying eventually, as Mr. Owen's case seems likely to do, from old age, it could always be argued that if he had lived to 120 he might have had a recurrence. He could not therefore be claimed to have been cured, even though he lived to a ripe old age and died from something else. Such an argument is, no doubt, logically free from flaw but most surgeons will be satisfied that Mr. Owen has obtained a cure and the patient is no doubt satisfied of it herself. Indeed, "wonderfully well and active and in her eighty-fourth year," and free from recurrence after a quarter of a century, I venture to think that it would be difficult to convince her of the contrary. Mr. Owen says that the most the surgeon can promise his patient is that he will "do his best." Clumsy comfort, indeed, for the unfortunate sufferer from this terrible disease. Moreover, the patient will have taken that much for granted before he ever consulted the surgeon. Everybody admits that the three years' limit is an arbitrary one. Everybody admits that cancer cells or germs can apparently lie dormant for years, can then cause recurrence, belie hopes, and spoil statistics (though it remains to be proved that some of these recurrences are not independent outbreaks of the disease, in which case they will fall into exactly the same category as Mr. Owen's broken thigh bone or abscess of the hand).

But granted all this, are we not, I would ask, in the light of recent results, justified in giving our patient just a *little* more encouragement than that we shall "do our best"? Surely we are. Surely our attitude to our patients should be one of distinct encouragement, begotten of the vastly improved results of operation in recent years, more especially as this encouragement is our most powerful weapon in the education of the public in the paramount necessity of early recognition and early operation. When the public are educated up to and encouraged to the fact that they can be cured then we shall see fewer of the "too late" cases and our percentages of cures will go up. And if it be conceded that cancer in the first instance is a local disease it must be admitted that every case of cancer, if it could be seen early enough and removed early enough, is curable. What has led to the vastly improved results of operation in recent years? It is the fact that the surgeon now operates with the thoroughness begotten of the hope, the expectation, the determination to eradicate the disease, not in the slipshod fashion of the man of 30 years ago who was convinced of the utter hopelessness of the complaint which he was dealing with. What is required to still better the results? The encouragement in the public that it is possible to cure them. Mr. Owen's simile of the bottle thrown out to sea turning up again after years adrift is apposite so far as it goes. But he omits to record the fact that the bottle frequently does not turn up at all. Moreover, Mr. Owen admits that in certain cases operation can bring lasting relief. What is this but cure? I cannot see the difference. At all events it is a good enough cure for the patient, even though it may not satisfy the "cold and unemotional" mind of the surgeon.

I am, Sirs, yours faithfully,

CHARLES P. CHILDE, B.A., F.R.C.S. Eng.,
Assistant Surgeon, Royal Portsmouth Hospital.

Southsea, April 20th, 1905.

PIROPLASMOSIS OR RED-WATER FEVER.

To the Editors of THE LANCET.

SIRS,—In examining a number of blood films for nematode infection I have chanced to come across a case of piroplasmosis. The hæmosporidia are to be seen, both intracorpuscular and free, in the blood plasma. Seven years ago the patient spent some two and a half years in America, where I conjecture that some insect, probably a tick, inflicted an infective wound. I should esteem it a great favour to learn through your columns whether this disease has been noticed to have affected man previous to the present time.

I am, Sirs, yours faithfully,

Birmingham, April 24th, 1905. J. DENCER WHITTLES.

UNFORTUNATE ADVERTISEMENT.

To the Editors of THE LANCET.

SIRS,—The columns of the *Times* to-day contain an article dealing with the work done by St. Bartholomew's Hospital, written in a style which may have its attractions (for some readers) and has for its object the increase of the income of the hospital, but surely it is not necessary to pillory "the stoutish man, black-bearded and with bald crown of shining pallor," and why should the house surgeons and dressers be brought before the public and described as "lithe and alert men with a firmness of mouth, a quiet grip in the eye" (*sic*), and dubbed "Young Davids, sworn enemies of death and saviours of life." Surely a remonstrance from members of the surgical staff would compel

this poetical and imaginative author to confine his descriptions within limits, for it is little short of nauseating to think of the example of St. Bartholomew's being followed by other hospitals and that some morning one may awake to find an enterprising journalist has prepared equally "attractive" copy and one's self included in the picture. We have it on authority that "some men are born to greatness." But surely the surgical staff of St. Bartholomew's Hospital, senior and junior, have had the greatness thrust upon them. I am, Sirs, yours faithfully,

April 18th, 1905. A HOSPITAL SURGEON.

THE NORDRACH COLONIE SANATORIUM.

THE BILL BEFORE THE HOUSE OF LORDS AND THE SANDGATE SANATORIUM SCANDAL.—WHAT IS REALLY MEANT BY "THE NORDRACH OPEN-AIR CURE."

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

Nordrach, April 20th, 1905.

A BILL has been introduced in the House of Lords "to provide for the licensing and control of hospitals for disease, for the notification of tuberculosis and to make other provisions for the health of the Sandgate urban district and for other purposes." The practical object of this Bill is to prevent the establishment of sanatoriums for the treatment of tuberculous patients unless a special licence is granted for this purpose. Such licences are only to be granted when the special by-laws are duly observed. These by-laws will be drawn up by the local authority subject to the approval of the Local Government Board. Further, it is also proposed to render the notification of cases of pulmonary tuberculosis compulsory. The reason why the sanitary authority of Sandgate thus seeks to obtain special powers is obviously the presence in that little town of what are known as "Jones's Homes." The grievance created by these pretended "sanatoriums" for the "outdoor treatment" of pulmonary tuberculosis has been fully described as also some of the questions that arise therefrom, together with the debate held on the subject at the Public Health Congress which last year met close by—namely, at Folkestone.[1] It will be remembered that instead of properly built sanatoriums standing in their own grounds a speculator at Sandgate filled ordinary houses with tuberculous patients. These houses for the most part have no grounds or gardens of their own. Their walls touch the walls of other houses. They overlook the main highway and the dust from this busy thoroughfare blows into the open windows or on the balconies where the patients are made to sit for the so-called outdoor treatment. Nevertheless, circulars have been sent to numerous medical men and to Poor-law guardians stating that at Sandgate "the open air cure is that generally practised at Nordrach, Germany, and at Davos Platz and Leysin, Switzerland." In view of this claim and of the proposed legislation on the subject I have travelled to Nordrach Colonie so as to make a full and accurate comparison between the two places. It has been seen that there are 2000 inhabitants in Sandgate and last June it was stated that during the previous year 897 patients suffering from pulmonary tuberculosis had been brought to Sandgate, had lived in the midst of its population, loitering in the streets and on the beach, and frequenting the public-houses. No less than 43 of the patients had died at Sandgate during the course of the year.

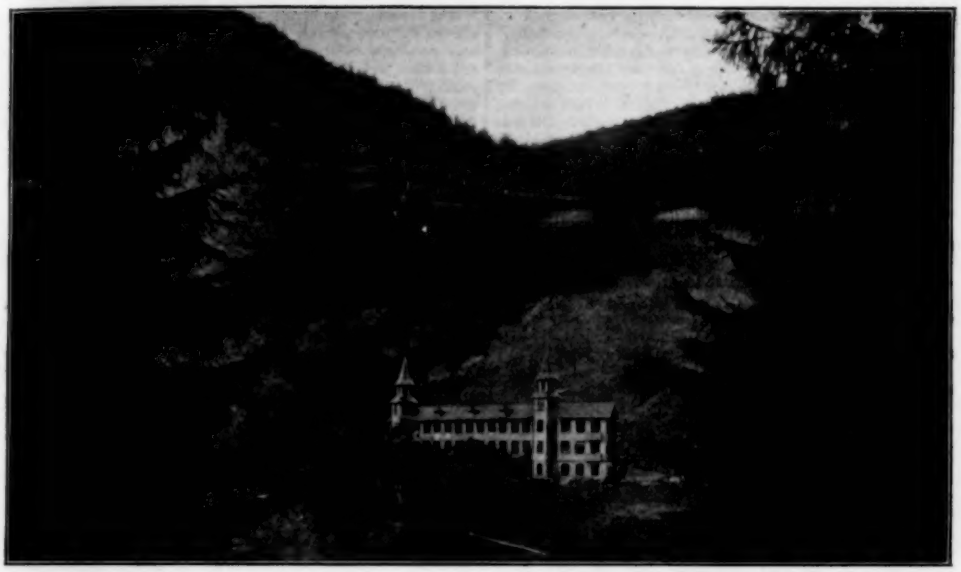
On the other hand, at Nordrach Colonie the only inhabitants are the patients and their attendants. When on my arrival it was discovered that I was not a patient my presence caused some embarrassment. However, in the course of time a pleasant little room was found for me in a picturesque Black Forest cottage owned by a peasant proprietor who utilises the water power of the mountain stream running by his house to saw some of the timber brought down by the foresters. But this is some little distance from the sanatorium, for I am lodged about half a mile away from the patients. When I was at Sandgate in private apartments I was only separated by the thickness of the house wall from 46 tuberculous pauper patients. How these patients are lodged at Sandgate was fully described. The accommodation was good if judged by the scale established for common lodging houses according to the Act of 1851, and absolutely inadequate if judged according to the rules and principles generally enforced in hospitals and sanatoriums. At Sandgate most of the patients sleep in cubicles or several in one room. As the charges at Sandgate vary from 21*s.* to 45*s.* per week and at Nordrach Colonie the uniform charge is 90*s.* per week it is not fair to make an unconditional comparison between the two places. But one of my arguments, based on German official figures, has always been that the charge made at Sandgate was absolutely insufficient even for pauper and charity patients. This is now more than ever obvious in the light of my present Nordrach Colonie experience. Besides, this is not a question of money but of treatment; and the first condition of treatment is to have sufficient air space whatever it may cost. Now the rule at Nordrach Colonie is to give every patient a room entirely to himself. Doubtless in the equipment of these rooms something more than what is strictly necessary has been provided, something approaching to a little luxury. For instance, every room has its shower-bath with unlimited hot and cold water laid on. This bath is in a corner. Next to the bath there are not one, but two, washhand basins—one to be used exclusively for washing the teeth, rinsing out the mouth, or gargling, and the other for washing the hands and the face. Then there is a comfortable lounge sofa, which, nevertheless, is very necessary for rest. Steam coils warm the room. The floor is covered with linoleum and all the floors are daily washed over. Each bedroom door faces an open window, giving on to the passage running behind the rooms, and opposite the door at the other end of the bedroom is the wide open window of the room itself. Thus by opening the door at least two large open windows face each other and a violent through draught is created. Such is the plan of the main building, which has been constructed expressly for the purpose, and contains 20 rooms of this description.

The other buildings are not quite as perfect, being existing houses or cottages that were adapted for the purpose, but they do not contain so many patients. The rooms are also all furnished in the same manner. Even in regard to a house called the Finkenzeller, which has ten beds for convalescents, the fitting up of the rooms is the same as for all the other cases. But, after all, a clean, large room with a big window wide open are the essentials if the air outside the window is all that can be desired. This is, however, not likely to be the case if the window opens out on to a street where there are many other houses, much traffic, and various trades, including, as at Sandgate, a fried-fish shop. At Nordrach there is only a small by-road leading over a mountain and through a portion of the Black Forest in one direction and in the other direction it goes to the village of Nordrach, which is some four miles away, then to the village of Zell some four miles further, and finally to the railway station of Biberach which is another two miles further off. A small post-car drives up from the station twice a day and two or three peasants' carts dragged by cows may also rumble slowly past in the course of the day. But even if the traffic were to increase it would not matter, for the patients' houses are situated a good distance off, most of them being 100 feet or more away from, and above, the road. Then the moisture and the water descending from the hills keep the land covered with luxuriant verdure so that there is no dust whatsoever. Green fields or gardens separate the various cottages or houses one from the other. The patients therefore live several hundred feet apart with nothing but fresh air between them, while the few cottages and houses that are a little closer to each other and to the road are occupied by the gardener, the farm hands who attend to the cows, and the servants.

As is well known, this sanatorium was established in 1889 by Dr. Otto Walther. For a long time he had wandered about in the Black Forest in search of a suitable site for this purpose. The estate which he finally secured is about 50 acres in size and is situated in a sheltered valley 1500 feet above the sea level and opening out towards the south and south-west. On the north and the east rise mountains to an altitude of 3000 feet covered with pine forests belonging to the State and extending over some 30,000 acres. On the estate itself, of course, Dr. Walther is absolute master. There is no layman with financial interests at stake to interfere with what he may deem necessary for the successful treatment of the patients. Therefore no one but the patients

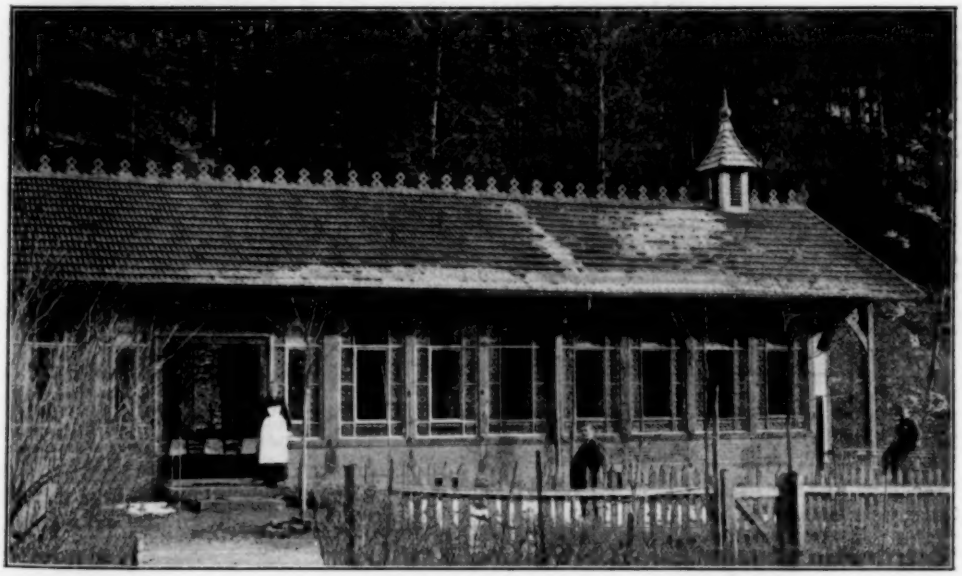
[1] THE LANCET, August 22nd, 1903 (p. 565); and June 11th (p. 1688) and 18th (p. 1752), and July 2nd, 1904 (p. 47).

FIG. 1.



General view of Dr. O. Walther's Sanatorium, Nordrach Colonie.

FIG. 2.



View of the Speisesaal or dining-hall.

and their attendants are allowed to live on the estate and there are hardly any inhabitants in the immediate neighbourhood. There are only a few isolated peasant cottages. Within half an hour's walk from the estate going all round and in every direction it would not be possible to find 200 persons. This is important because it prevents the opening near the Nordrach Colonie Sanatorium of any sort of establishment, such as a café, which might tempt some of the patients to break the rules of their treatment. At Sandgate the patients, by way of outdoor treatment, are often discerned lolling over public-house bars or loitering by public-house doors. Here there is no public house, no inn, no café, no hotel that could attract the patients. On one occasion it was proposed to open some such establishment close to the Nordrach Colonie Sanatorium but Dr. Walther opposed the granting of a licence to sell intoxicants. He pointed out that so far as the population of his sanatorium was concerned he himself held a licence and provided them with all that they needed; while outside his estate the population was so sparse that there was not sufficient demand to justify the granting of a licence. Consequently, the application was rejected. Thus the patients at Nordrach cannot get anything to drink except what Dr. Walther or his medical colleagues, Dr. Weltz and Mr. J. Penn Milton, allow them to take. The same applies in regard to food. Indeed, there is no shop there at all. There is only a kiosk where postcards and trinkets are sold and where the owner also undertakes to develop photographs. Unless it be in photography and in postage stamps it is difficult to find any means of spending money on diversions. Even the diversion of social intercourse or animated discussions is not encouraged. Nor is it thought desirable for patients to form themselves into clusters and to sit together even in the open. Experience shows that arguments arise, the patients get excited, and then an unfavourable rise of temperature results. But the patients are kept busy and the day is ordered as follows:—Breakfast is served at 8 A.M. and by 8.30 the patients must start on the walks ordered during the medical visit which takes place between 7 and 8 A.M. Between noon and 1 P.M. the patients must be back and resting in their rooms or outside. They then receive their medical attendants' second visit. The temperature is taken a second time and according to the result of this renewed examination the patients are told how much more exercise to have and where they must go in the afternoon after the 1 o'clock dinner. Then between 6 and 7 P.M. they are back again resting and ready to receive another, and final, visit from their medical attendants. It is only after the 7 o'clock supper that the patients are left to do much as they please but they have to be in bed soon after 9 o'clock.

The walks are a great feature of the treatment. It is essential that the space for such walks should be available and here there are 30,000 acres of Crown pine-clad mountains. On these mountains there are innumerable horizontal roads for the use of the woodmen, by whom alone they are frequented. In the forest I walked fast for three hours without meeting a single person, not even a woodman. On the estate itself special zig-zag paths have been cut in the side of the mountains, so as to provide easy gradual ascents and many benches are placed in sheltered positions for the patients to rest. The longest morning walks allowed are from five to eight miles with an ascent of about 1000 feet, and there are 14 such walks, so that it is possible to go along a different path or road and in a different direction every day for a fortnight.

(To be continued.)

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Midwives Act in Manchester.

UNDER the Midwives Act of 1902 certain powers have been conferred on the Manchester city council and Dr. A. W. Chapman, chairman of the committee for carrying out its provisions, made an interesting statement to the council at its last meeting. He stated that now no woman can use the title of midwife unless certificated by the Central Midwives Board. If any infringement of the Act occurs the council must be prepared to institute proceedings. He told the council that 18 cases of blood poisoning, with nine deaths, had already been investigated, which showed that supervision had long been needed. "It was necessary that powers should be given to the medical officer of health in consultation with the chairman of the committee at once to suspend any midwife," as, if unfit for her duties, she must be removed at once, before the committee would have time to meet. The proposal that the committee should be empowered to pay fees to medical practitioners was put forward under the Public Health Act, so that the committee might retain the control in its own hands. The calling in of a medical man would prevent collusion. The maximum fee would be a guinea. "The committee recommended that application be made to the Local Government Board for sanction to the provision of medical assistance for the poorer inhabitants of the city in certain cases," and this recommendation was adopted by the council.

Manchester Royal Infirmary.

On April 17th at the meeting of the board of management of the Royal Infirmary Mr. Charles Hopkinson moved the adoption of a recommendation from the infirmary committee that, provided the new Ear Hospital (the building of which is contemplated) be built in close proximity to the new infirmary site and that its facilities are satisfactory to the University, the board would not allocate any beds to aural cases. Mr. Hopkinson said that arrangements were being made "to cut out the eye beds and the skin diseases beds from the new infirmary so as to leave these cases to specialised hospitals." He thought therefore that as the policy had been endorsed there was no difference in cutting out the ear beds "if they could arrange for ..... an ear hospital close to." The motion was altered so as to provide for the approval of the board as to what should be regarded as "close proximity." The feeling seemed to be in favour of the proposal but its passing was deferred until Dr. W. Milligan, the aural surgeon to the infirmary, had been consulted. As he is also one of the surgeons to the Ear Hospital there will probably be no great difficulty in making the arrangement. The mover of the proposal thought that the expense of specialising should be avoided and that the infirmary should be kept to the work of a "general hospital." With regard to the future of a general hospital it is not safe to prophesy but as there seem no department of medicine or surgery and very few square inches of the human body not claimed by some specialist, it looks as if before long all would be specialised and there could be no such thing as a general hospital. The immediate prospect seems to be that the infirmary will be surrounded by special hospitals like (if the simile may be forgiven) a hen with a somewhat motley brood of chickens.—The board of management of the infirmary has made the following appointments: Dr. George Ashton, reappointed assistant surgical officer; Dr. C. H. Melland to be director of the Clinical Laboratory and Dr. F. C. Moore assistant director; Dr. A. Ramsbottom reappointed resident medical officer; and Dr. E. N. Cunliffe reappointed resident medical officer at the Barnes Convalescent Home.

Spread of Measles amongst Infants at School.

The annual report of Dr. A. J. Laird, the medical officer of health of Crewe, discusses the question of the attendance of very young children at the public elementary schools. He refers to the great infantile mortality in the borough and points out that between August last, when the first notification of measles was received, to the end of the year the disease had invaded 14 schools. The risk of measles spreading, as it does so readily among "infants at school," raised the question as to the advisability of children under five years of age attending day schools. At Crewe there are 1270 children under five years of age and it may be doubted whether the wisdom and learning which they there assimilate are of sufficient value to make it worth while to run the risk of taking infectious diseases such as measles or whooping-cough. All who know much of the infant department of our elementary schools are well aware of the fact that the mothers look on them as admirable crèches, where the children are safely cared for, while they themselves can attend without interruption to their household duties or to the pleasant relaxation of a gossip with their neighbours. The writer knows that it is a common practice in some places for quite young infants to be taken to school in charge of those a little older, so that they may be "out of the way."

Lancashire Inebriates Reformatory.

It is a costly matter to attempt the reform of inebriates at

the reformatory at Whalley. At the last meeting of the Manchester city council attention was drawn to a payment of £2009 on the precept of the Lancashire Inebriates Act Board for 1905–06, an increase of £400 on the previous year. The cost, it was said, is constantly increasing. There were 66 inmates at Whalley last year, 30 being sent from Manchester and 24 from Liverpool. These 66 in the year cost £12,657 and the capital expenditure on the buildings and the land was £95,338. The council was reminded that at the Grove Retreat for Inebriate Women at Fallowfield 25 patients were dealt with last year at a cost of £869. The chairman of the watch committee reminded the council that in December the matter was considered and he then stated that the cost was about £1 13*s.* 6*d.* a week for each inmate and he did not suppose that it would ever be much less than 30*s.* a week. As the council had agreed to join in this county scheme he did not think it quite dignified to be always harping on the expense. No doubt. But all over the country there is the same feeling of irritation as regards the lavish expenditure on institutions of all sorts and in almost every other direction in which councils, whether of city or county, can vie with each other in showing their disregard of the old saying that the coat should be cut according to the cloth.

Chrysanthemum Smoking.

In December last Mr. A. W. Martin, the medical officer of health of Gorton, recommended the smoking of dried chrysanthemum petals as "a pleasant and harmless substitute" for tobacco. Perhaps he thought that it would be a gentle mode of weaning those in danger of becoming slaves to the pipe or providing a pleasant substitute for those with whom tobacco did not agree. But a case has been reported of unlooked for improvement, attributed to chrysanthemum smoking, in a person who had been "a victim for 15 years to frequent and violent epileptic fits due to chronic dyspepsia." He smoked his first pipe on Jan. 1st and began at once to improve, so that now he is "able to take his half-hour's walk without a stick, instead of being afraid to cross a space of nine feet with it; he can get six nights' rest out of seven, instead of one out of four, and can even attend church." However sceptical anyone may be as to the cause of the improvement and however mindful of *post hoc propter hoc*, the patient is to be congratulated. He adds that the flowers act best when mixed with cascarilla bark, as suggested by Mr. Martin. Should this case attain much publicity there will soon be a run on chrysanthemum blooms.

Ill-fed School Children.

The underfeeding of children in our elementary schools has been much discussed of late and wide sympathy has been aroused. But while all would seek to relieve suffering whether in young or old, it is desirable before going impulsively into schemes which may turn out to be ill-considered first of all to ascertain the facts. In Manchester Dr. A. Brown Ritchie, the medical officer to the Manchester education committee, considers that the question of underfeeding has been a good deal exaggerated. This is not to be wondered at, for the idea of children half-fed, and suffering from the painful gnawing of chronic hunger, going through their daily school tasks while physically unable to use what powers of mind they possess, is one that humane people would not endure. He thinks that the number underfed from the poverty of parents is smaller than is supposed. The appearance of privation might not be due to underfeeding so much as to ill-directed feeding, as, for instance, the diet of bread and tea on which many children live. An inquiry is now being made dealing with about 12,000 children which will show the amount and the causes of underfeeding. A small but interesting investigation carried out a little time ago regarding backward children in the schools threw some light on the problem of underfeeding. "Out of 450 backward children 325 were ill-nourished and in a low state of health, while in 111 cases the children were seriously ill-nourished." Backwardness is, says Dr. Ritchie, in the vast majority of cases due to bad health or irregular attendance apart from bad health. The bad health, of course, may or may not be connected with underfeeding. Many of these children seem underfed or ill-nourished, some suffer from chronic disease—e.g., tubercle—others have disease of the ears or defective sight. Many are very dull or slow mentally but not actually "mentally deficient" though otherwise in good health. It is to be noted that a large proportion of the children have "teeth in a state of advanced decay." The inquiry showed conclusively that "the most backward children in a school are also the worst fed." It should be mentioned that 130 of the 450 backward scholars "were also insufficiently clothed." When cold is added to ill-feeding or insufficient feeding the intellectual powers will not long be at their best. As to the causes of underfeeding they may be very various. Misfortune and genuine poverty in some cases, idleness and extravagance with drunkenness and wilful neglect in others, all come into the account and show how complex the problem is and how difficult, or rather how impossible, it will be to remedy the evil by one method only if the interests of the child and those of the taxpayer are to be equitably dealt with.

Our Cowsheds.

The annual report of the medical officer of health of the Lancaster rural district shows that notwithstanding the increased interest taken in sanitation there are conditions still to be found, without, indeed, the necessity for much searching, that are a disgrace as well as a danger to the community. From this district quantities of milk are sent daily to Manchester, Liverpool, and other towns, and the conditions under which the cows supplying it are kept become interesting. The report says that "the cowsheds are dirty, filthy places and very insanitary. Young stock are, as a rule, kept in dark, unwholesome dens which seem designed especially for spreading tuberculosis," and that "as the law stands the authority has very little power in the matter, as the cattle are not kept constantly in the cowsheds but are for about half the year turned out to graze"—happily for the poor beasts. There are seven sewerage systems in the district and not one is described as satisfactory, while in many parts of the district "there is an absence of suitable water-supplies." This, of course, renders more difficult than it should be the proper cleansing and scalding of dairy utensils. This sketch of the conditions at the source of the milk-supply in one locality may no doubt be taken as typical of the state of matters in many others.

Notification of Chicken-pox.

The town council of Heywood has sensibly ordered that for the next three months chicken-pox must be notified. This step has been taken in consequence of the prevalence of small-pox, incipient cases of which have been mistaken for chicken-pox. In his annual report just issued Mr. H. H. I. Hitchon, the medical officer of health of Heywood, states that no case of small-pox has occurred in a vaccinated person under 15 years of age.

A new infectious hospital will shortly be opened at Hyde and it will benefit to the extent of £869 under the will of the late Mrs. Booth of Godley.

April 25th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Swansea Hospital.

THE medical staff of the Swansea Hospital has for long been of opinion that some steps should be taken to prevent persons who are well able to pay a private practitioner from receiving treatment at the hospital. The house committee has been considering the question and has reported to the management committee that there is conclusive evidence of such abuse being practised and for the purpose of excluding persons who are not fit objects of charity it recommends that every proposed patient should fill up and send or bring with the subscriber's letter a form giving particulars of earnings, number of family, &c., and a declaration of inability to pay for private treatment, and, further, that any case which on the information supplied seems to the house committee doubtful should be referred to the Charity Organisation Society for report, the house committee to decide after the receipt of this information whether the case is a suitable one. When the question of charging for medicines and dressings was under discussion the committee decided that it would be imprudent to make any charge.

Death of Dr. Edward Henry Warner.

Much regret is felt in Bristol on the occurrence of the death of Dr. E. H. Warner of Lawrence Hill. He was a

native of Winchester and took the degrees of M.B., C.M. of the University of Edinburgh in 1883, shortly afterwards being appointed assistant medical officer of the county asylum at Lancaster, where he took part in the organisation and administration of the extensive additions which had just been made to that institution. In 1885 he took his M.D. degree and acted for a short time as one of the medical officers of the Bristol city asylum at Fishponds. During the past 18 years he had been in private practice, holding one of the Poor-law appointments under the Bristol board of guardians. He leaves a widow and one son.

The Midwives Act in Cardiff.

The administration of the Midwives Act in Cardiff is being very materially assisted by others than those who are officially concerned in its administration. A course of lectures to midwives was inaugurated by the University College last autumn and the local branch of the Queen Victoria's Jubilee Institute for Nurses has now established a maternity department. A house has been taken for the accommodation of a superintendent and eight midwives and for four pupils undergoing training. The cost of this new department is estimated at £400 yearly but it is expected that a large proportion of this sum will come back to the institute as pupils' and other fees.

Death of Mr John Jenkin Lloyd.

Mr. J. Jenkin Lloyd, who died suddenly from apoplexy at Llanelly, Carmarthenshire, was a native of that town and he had resided there for some years. He received his medical education at University College Hospital and after qualifying as L.R.C.P. Edin., L.S.A. in 1880 was for a short time engaged in colliery practice in Merthyr Tydvil. He was much interested in the public life of Llanelly and was a prominent member of the Presbyterian Church. His widow and one child survive him.

Bristol Eye Dispensary.

The annual meeting of the subscribers to this institution was held on April 18th. The medical report stated that during 1904 the patients numbered 2315, compared with 2268 in 1903. The financial statement showed that a small favourable balance remained at the end of the year.

April 25th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Royal College of Surgeons of Edinburgh.

THE fourth centenary celebration of the Royal College of Surgeons of Edinburgh will be held on July 19th, 20th, and 21st. The programme will be as follows. On Wednesday, July 19th, at 9.30 P.M., there will be a reception of Honorary Fellows elect by the President and Fellows in the Royal College of Surgeons (full evening dress). On Thursday, July 20th, at 10.30 A.M., the Honorary Fellows elect, Fellows, and guests will meet in Parliament Hall (academic robes, official costume, or uniform). At 11.30 A.M. there will be Divine Service in St. Giles's Cathedral, to which a procession will start from Parliament Hall at 11 A.M. At 4 P.M. in the M'Ewan Hall there will be an address by the President, presentation of congratulatory addresses, and conferring of Honorary Fellowships. The doors will be opened at 3 P.M. and there will be an organ recital at 3.30 P.M. (Honorary Fellows elect, Fellows, and guests will be expected to attend in their academic robes, official costume, or uniform). At 9.30 P.M. there will be an evening reception in the Royal College of Surgeons (full evening dress or uniform). On Friday, July 21st, at 3.30 P.M., there will be a reception in the grounds of George Heriot's Hospital. At 7 P.M. there will be a banquet in the Music Hall (court dress, uniform, or full evening dress). Dinner tickets for ordinary Fellows, one guinea. Except in the case of the reception on July 19th and the cathedral service admission to the various ceremonies will be by ticket only. Fellows of the College who desire to attend the celebration are requested to intimate the fact and state at which of the ceremonies it is their intention to be present. Letters to this effect, addressed to the honorary secretary, Fourth Centenary Celebration, Royal College of Surgeons, Edinburgh, must be received on or before June 1st. After that date it may not be impossible to guarantee tickets for the various functions.

University of Glasgow.

The difficulty which exists in the way of making alterations in the curricula of any of the Scotch Universities was emphasised recently at the monthly meeting of the Glasgow University Court. In the present state of matters independent reform or development, except in insignificant details, is almost impossible. According to Professor Jones, who raised the question in the University Court in the event of any proposed new ordinance they had to communicate with the Senate and the general council (which was quite right), but they had also to communicate with the other Scotch Universities and if they dissented they reported to His Majesty in Council. Then His Majesty in Council referred the question to the Universities' Committee. This committee in turn reported to His Majesty and the matter was then laid before both Houses of Parliament. It was pointed out that the Scotch Universities did not possess the same privileges as Manchester, Liverpool, or other universities such as Birmingham, in which such changes as were involved in these ordinances could be effected by the bodies themselves. Professor Jones formally moved "that we call attention to the difficulty of bringing about changes in the curricula, the arrangement of winter and summer sessions, and other matters, arising from the fact that such changes can be carried out only if the four Universities act together and that a committee be appointed to consider the question." After some discussion the motion was carried and a committee was appointed. There is no doubt that the decision of the court will commend itself to all interested in the welfare of the University. It seems intolerable that freedom of development in any one university should be restricted by the mere cumbrousness of the necessary procedure. Although a certain standard of uniformity for the four Universities is advisable it is surely not essential or to their advantage that they should always act together. The needs of the University of Glasgow, situated as it is in a centre of enormous industrial development, cannot always be the same as those of the University of Edinburgh or the University of Aberdeen.

The Glasgow and West of Scotland Coöperation of Trained Nurses.

The annual report of the Glasgow and West of Scotland Coöperation of Trained Nurses records a year of continued prosperity and useful work. Founded 12 years ago this association, as shown by the success with which it has met, has filled a distinct want in Glasgow and the West of Scotland. The convenience of such an association to the public and to the medical profession is obvious, as with so large a staff of nurses as it possesses it makes it extremely easy to secure a nurse for a sick person even on the shortest notice. Also the fact that no nurse is admitted to the staff unless she can produce a certificate of three years' continuous and systematic training in a recognised general hospital of at least 100 beds and that maternity nurses are not exempt from this condition guarantees that each nurse must have attained to a certain standard of efficiency. The value of such an association to the nurses themselves cannot be overrated. The nurse who after completing her hospital training determines to take up private nursing without joining some such association as this will almost invariably at first find cases difficult to get and even when a certain connexion has been formed the outlook is always more or less precarious. According to the report of this association the average amount earned by each nurse during the past year, allowing one month for holiday, was between £60 and £70. In 1894, when the coöperation was first started, the nurses on the staff numbered 31, the cases nursed numbered 65, and the gross earnings of the nurses were £293. In 1904 there were 176 nurses on the roll, 1762 cases were nursed, and the earnings for the year came to £10,724. The executive committee is composed of members of the medical profession representatives of the nurses, a few business gentlemen, and several ladies interested in the work. With a committee composed in this fashion one can expect that the interests neither of the public or the medical profession nor of the nurses themselves will be neglected and that the association will be run on a sound financial basis.

April 25th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The General Medical Council and Ireland.

Dr. Leonard Kidd of Enniskillen has issued his address as a candidate for the office of Direct Representative on the General Medical Council at the coming election in 1906.

After pointing out that the seven Irish Representatives are at present drawn from the consultant class, are all resident in Dublin, and are all in some way connected with teaching centres, he asks for support on the ground that he is a "provincial general practitioner," absolutely unconnected with any medical school or corporation. Dr. Kidd is in favour of increasing the Direct Representation to the extent of one half of the Council and of election of the Direct Representatives under a topographical arrangement, of the "one-portal" system of examination, of a "Students' Register," and of stringent measures being taken against unqualified practice. Dr. Kidd adds that should any more acceptable "provincial general practitioner" come forward as a candidate he is prepared to accept the decision of the electorate as expressed by a preliminary poll or other satisfactory means and retire in his favour. Since Dr. Kidd's candidature began the following branches of the Irish Medical Association have passed resolutions approving of the principle of electing a provincial practitioner: Fermanagh, Donegal, Sligo, Roscommon, co. Cork, Waterford, and South County Down. The Portadown and West Down division of the British Medical Association has passed a similar resolution. In the daily papers of April 25th a letter appears from Dr. George E. J. Greene making the suggestion that since about nine months must elapse before the medical men of Ireland can elect one of their number to voice their views on the General Medical Council it would be unwise to make any promises of support until there is a full opportunity of considering the matter at a meeting of the medical electors in Dublin or elsewhere. He says there is a general feeling that Dublin is much over-represented. Dr. Greene is a well-known practitioner; he has been a justice of the peace for the county of Wexford for many years and is a vice-president of the Irish Medical Association.

Tragedy in an Asylum.

In the Monaghan and Cavan Asylum on April 23rd, about 10 P.M., when the patients in the institution were retiring, a quarrel took place between two female patients who have been 20 years in the asylum, during which one of them struck the other several blows with an enamelled vessel on the head, with the result that she died 20 minutes afterwards from compression of the brain. An inquest was held on the next day, the jury finding that death was due to the injury done to the brain by the wounds to the head.

Royal Victoria Hospital, Belfast.

In the Belfast papers of April 19th an interesting extract has been published from a New Zealand paper, the *Lyttelton Times*, written by a medical man, Dr. Thacker, who gives an account of his visits to hospitals at Dublin, Edinburgh, Belfast, New York, Chicago, and Baltimore. He says the best and most up-to-date institution that he saw was the Royal Victoria Hospital, Belfast, and he emphasises specially two features in it—the plenum system of heating and ventilating and the "unit" system by which each member of the staff has practically a hospital of his own, the "unit" consisting of a large male and female ward of 14 beds each with two small wards. Each "unit" has its own kitchen, each physician has a clinical laboratory and lecture room, and each surgeon an operating theatre. The architect of the new hospital at Bombay, who went to Belfast personally to inquire into the plenum system, intends, as stated by Dr. Thacker, to make provision for it in his plans.

The Meath Hospital and County Dublin Infirmary.

The annual meeting of the governors of the Meath Hospital took place on April 13th. The report announced that the committee of the hospital has determined to erect a building for the nurses in the hospital grounds. Plans for this block have been prepared and the cost will be about £5000. There was some discussion as to the question whether the representatives of the county council had a right to exercise a vote in the election of governors of the hospital, and an opinion was expressed by those representing the hospital authorities that they had not. A meeting of the Dublin county council was held at the offices in Rutland-square on April 20th, when the chairman, Mr. P. J. Neill, J.P., alluding to the published report of the discussion at the Meath Hospital, suggested that an inquiry should be made as to the *locus standi* of the representatives of the council on that hospital board. He certainly thought that in the case of a body contributing £1000 a year to the funds of that institution their representatives should not occupy an inferior position.

April 25th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Gelatin in the Treatment of Aneurysm.

AT the meeting of the Academy of Medicine held on April 11th M. Le Dentu reported a successful case of popliteal aneurysm treated by injections of gelatinised serum, a method which was introduced by M. Lancereaux and M. Paulesco. Measures tending to occlude the artery, such as ligature above the sac or extirpation of the sac, are, in the case of a popliteal aneurysm, peculiarly prone to be followed by gangrene. M. Le Dentu's patient was a man, aged 20 years, who suffered from a traumatic popliteal aneurysm. During a period of two months he received seven injections of a serum containing 2 per cent. of gelatin in quantities of 200 grammes at a time. The injections were made in the gluteal region. After the second injection the pulsation in the sac had disappeared and at the end of two months the cure was complete. The method is simple and if care be taken to sterilise the gelatin by exposing it to a heat of 115° C. so as to remove any risk of tetanus infection it may be said to be free from danger.

Hygiene in the Laundry.

A decree dealing with the above subject has just been issued by the Council of State, acting on instructions from the Minister of Commerce and of the Consultative Committee of Arts and Manufactures. The decree lays down that no dirty linen shall be brought into the laundry except carefully packed in sacks or in some other receptacle which can be absolutely closed during transit. If possible the dirty linen, together with its receptacle, must be disinfected before any sorting is done, or at least the linen must be wetted so as to avoid any dissemination of dust. In this last case the receptacles must be scoured or disinfected separately. Disinfection is obligatory in the case of dirty linen coming from hospitals or from any place where sick folk are received. Finally, the staff employed in the manipulation of the linen are to be supplied with overalls which shall be kept specially for the work. Dirty linen must not be handled in the ironing rooms or in any other room in which clean linen is handled and no article of food or drink is to be consumed in the rooms devoted to the handling of dirty linen.

April 25th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Meningitis decreasing in New York City.

MENINGITIS, with the coming of warmer and more settled weather, is on the wane in New York. The death-rate for the week ended April 8th at noon was 20·11 per 1000, while for the corresponding week of 1904 it was 25·76. During the week ended April 8th there were 110 deaths due to cerebro-spinal meningitis compared to a death list of 131 in the previous week from the same cause. It is also believed that several deaths have been ascribed to meningitis which were in fact due to other diseases. At a meeting of the Medical Association of Greater New York held recently one of the subjects discussed was that of the use of diphtheria antitoxin in the treatment of cerebro-spinal meningitis. Dr. Arthur Wolff of the New York board of health described the results of his investigations as to the value of the serum as a remedial and curative agent. He stated that his conclusions were that practically the only good the serum did was when it was applied in the earliest stages of the disease and then only when administered in large doses. In the later stages he said that antitoxin was absolutely useless. Dr. Wolff said that experiments with white rats, rabbits, guinea-pigs, and monkeys seemed to show that a certain antagonism existed between diphtheria antitoxin and the cerebro-spinal meningitis cultures. It had been noticed with the outbreak of meningitis that cultures taken from the nose and the throats of patients in the hospitals at the time of the abatement of the diphtheria epidemic showed highly different growths, leading to the supposition that the two diseases were antagonistic. Acting on this supposition attempts had been made to use antitoxin in the treatment of cerebro-spinal meningitis. These

as stated above, had been hopeless in advanced cases but often helpful in the early stages of the disease.

New York City Census by the Board of Health.

The New York board of health is at the present time taking a sanitary census, an appropriation by the board of estimate of $35,000 (£7000) having been made for this purpose. 150 medical men have been put to work on the census, whose duty will be to ascertain not only the exact population of the city, but to get an idea of the health of the entire community, according to age, nationality, and locality. Every person will be subjected to an examination and, as far as is possible, the cause of his or her condition recorded, together with the name, address, age, and if a foreigner his or her condition as near as can be ascertained on entering the United States, so as to show whether a disease was contracted here or imported. The work is expected to take four or five months, perhaps longer.

April 16th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

A Week's Record in Plague Mortality.

A RECORD of 53,895 deaths from plague throughout India was returned for the week ending March 25th. This is a rise of 11,807 over the previous seven days. It forms a lamentable sequel to the let-alone policy which has been formulated by the Government of India and adopted by the provincial governments. Of this large total 20,501 deaths occurred in the United Provinces, 18,778 in the Punjab, 8830 in Bengal, 2548 in the Bombay districts, 968 in Rajputana, 618 in Bombay City, 570 in Calcutta, and 95 in Rangoon. The outbreak in Aden seems to be dying down, as only 32 deaths were recorded. The disease is spreading not only in Rangoon itself but in other parts of Burmah.

The New Plague Research Committee.

The Government despatch concerning the further scientific investigation into the etiology of plague announces the appointment of a committee. It admits the failure of the expedients which have been tried and recognises that educated opinion is disposed to criticise the Government for its present policy of inaction. It expresses the opinion of the Government that the repressive policy first adopted was worse than useless and admits that because later the epidemic spread to parts where the enforcement of strict measures would be dangerous the policy of compulsion was deliberately replaced by one of persuasion and assistance. It, however, admits that the latter policy has been as much of a failure as the former one. After eight years of the pestilence the Government concludes that "we think that we should now deliberately attack the problem from the scientific side." It is better late than never, but the medical world will certainly charge the Government with neglect of the enormous opportunities which the continued presence of the disease in India has offered for its more exhaustive study. In making proposals for the constitution of the committee of two or three of the best experts available the Government half apologises to the Indian Medical Service. It ought to apologise because from this service a very competent committee might have been formed long ago and might have been carrying on original investigations under continuous conditions and with numerous other advantages. The committee is to have an absolutely free hand in the conduct of its inquiry. It is to be hoped that it will be free to report also. No term for its inquiries has been fixed "but so long as they are steadily increasing our stock of knowledge of a kind which may be expected in the end to lead to practical results we would place no term to the inquiry." It appears that on the recommendation of the Lister Institute and the Royal Society a small committee of these bodies with a representative of the India Office will administer a grant for the purpose of an Indian plague research expedition, consisting of two experts and two junior Indian medical officers. The joint committee is to prescribe and direct researches and to examine results. It seems strange that "two or three of the best experts available" should require to have their work prescribed and their researches directed.

Endowment for Sanitary Improvements.

Spontaneous gifts for sanitary improvements are so uncommon in India that the action of Raja Joyendra Narain Roy of Lalgola in the district of Murshidabad deserves to be brought to notice. He has given Rs.50,000 for the creation of an endowment for the sanitary improvement of the district as a memorial to his late wife. The Raja previously gave a lakh of rupees for improving the water-supply in the different districts of Bengal.

April 7th, 1905.

Obituary.

CALEB CAREY RICHARDS, M.D. ST. AND., M.R.C.S. ENG., L.S.A.

THE death, in his sixty-eighth year, of Dr. Caleb Carey Richards of Arundel-square, Islington, on April 19th, marks the severing of another link with the past generation of practitioners and the termination of a career conspicuous for its usefulness. Receiving his professional education at King's College, London, where he enjoyed the surgical tuition of Sir William Fergusson, he graduated as M.D. at the University of St. Andrews in 1861, also taking the diplomas of M.R.C.S. Eng. and L.S.A. in the same year. He then became assistant to Dr. Davies of Aberdare, a connexion by marriage. There he extended his knowledge of the surgical side of his profession and in January, 1866, contributed to THE LANCET a report of a case of hydatids of the liver, in which he advocated the use of operative measures as opposed to the medical treatment then in vogue. During that year there occurred a memorable outbreak of cholera in the East-end of London and he was placed in charge of one of the dispensaries which were organised to cope with the epidemic. Some idea of the arduous nature of the work may be gleaned from the perusal of an article from his pen which appeared in the *Medical Press and Circular* on Jan. 2nd, 1867, and in the course of which he stated that he had, in coöperation with three assistants, attended 7000 cases in six weeks. On the conclusion of the outbreak he obtained without solicitation and as the result of the admiration aroused by his devotion to duty a parish appointment vacant at that time in the district and here he practised uninterruptedly for 17 years, being compelled at length, on account of ill-health, to relinquish his extensive connexion. He had during this long period enjoyed an enormous popularity as an obstetrician, his attendances on labours reaching, in round numbers, the extraordinary total of 10,000; and his experience in this department of practice led to his receiving an appointment as assistant physician to the Royal Maternity Charity under the auspices of Dr. Robert Barnes. Dr. Richards leaves a widow and two sons, one of whom is in the medical profession.

ALEXANDER KEITH CAMPBELL, M.D. EDIN., D.P.H. ABERD.

Dr. A. Keith Campbell of The Lyncombes, Ebbw Vale, Monmouthshire, died on March 23rd, after a very brief illness, in his thirty-second year. This premature close of a career which was remarkably full of promise has come as a painful shock to a large circle of his attached friends. At the Universities of Edinburgh and Aberdeen, where he obtained his professional education, his work was characterised by unusual brilliance. At the University of Edinburgh eight class medals out of a possible ten fell to his lot. He was awarded honours on graduating as M.B. and C.M. in 1894, and commendation when he proceeded to the degree of M.D. in 1898; while the diploma of D.P.H. which he received at Aberdeen was also taken with honours. Dr. Campbell's earliest appointments were chiefly in asylums for the insane. Among his various contributions to the periodical literature of the profession, one on Recovery after Taking an Ounce of Chlorodyne and 250 Grains of Sulphonal was published in THE LANCET of March 6th, 1897, p. 661. Dr. Campbell was possessed of a kindly and tactful nature and his skilfulness in practical work inspired confidence and esteem in all with whom he came in contact.

TIVERTON INFIRMARY.—The trustees of the late Mr. Stephen Henry Fisher, L.R.C.P. Lond., M.R.C.S. Eng., have presented a valuable library of medical books to the Tiverton (Devon) Infirmary.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated :—

Surgery.—A. Anderson (Section II.), Leeds; W. L. Crabtree, Leeds and Charing Cross Hospital; W. A. T. Lloyd (Sections I. and II.), and E. B. Miles, London Hospital; and E. W. A. Walker (Sections I. and II.), Oxford, London, and Guy's Hospitals.

Medicine.—E. J. Blewitt (Sections I. and II.), London Hospital; A. G. C. Findlay (Sections I. and II.), University College Hospital; P. C. W. Laws, St. George's Hospital; W. S. Mitchell (Sections I. and II.), St. Mary's Hospital; R. H. Terry (Section II.), Guy's Hospital; and E. W. A. Walker (Sections I. and II.), Oxford, London, and Guy's Hospitals.

Forensic Medicine.—E. J. Blewitt, London Hospital; S. A. Mahmood and J. P. B. Snell, Middlesex Hospital; A. R. Wade, St. Bartholomew's Hospital; and E. W. A. Walker, Oxford, London, and Guy's Hospitals.

Midwifery.—W. G. O'Malley, London Hospital; R. St. Johnston, Birmingham; and E. W. A. Walker, Oxford, London, and Guy's Hospitals.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: A. Anderson, W. A. T. Lloyd, and E. W. A. Walker.

UNIVERSITY OF DURHAM.—At examinations for the degree of Bachelor in Medicine held recently the following candidates satisfied the examiners :—

FIRST EXAMINATION.

Elementary Anatomy and Biology, Chemistry and Physics.—First-class Honours: Charles Westland Greene, College of Surgeons, Ireland. *Second-class Honours:* Eldred Curwen Braithwaite, College of Medicine, Newcastle-upon-Tyne. *Pass List:* Charles Martin Brown, Owens College, Manchester; Charles Ernest Lewis, Burman, College of Medicine, Newcastle-upon-Tyne; Bloomfield George Henry Connolly, Guy's Hospital; and Cyril John Henderson and William Sacco, College of Medicine, Newcastle-upon-Tyne.

Elementary Anatomy and Biology.—Ronald Mathwin Angus, Harriett Amelia Rachel Apps, Wilfred Barkes, Alexander Hay Bower, John George Campbell, B.A., and Harold Alexander Cooper, College of Medicine, Newcastle-upon-Tyne; Leslie Wilson Evans, Guy's Hospital; Francis Hamley Fawkes, St. Mary's Hospital; Reginald Cyril Herbert Francis, Patrick Albert Galpin, Cyril Gray, Arthur Charles Greene, John Pritt Jackson, and Annie Viccars Mack, College of Medicine, Newcastle-upon-Tyne; Ernest Percy Martin, St. Thomas's Hospital; Ruth Nicholson, John Howard Owen, Friederike Rahtkens, Robert Raffle, and Charles Elias Reindorf, College of Medicine, Newcastle-upon-Tyne; Matilda Ann Sinclair, London School of Medicine for Women; and Theodore William Stallybrass, Harold Widdrington Sykes, George Huntly Wood, and Alfred Armitage Woodhouse, B.A., College of Medicine, Newcastle-upon-Tyne.

Chemistry and Physics.—Jacques Marius Louis François Coquelin, University of Paris; Claude Percival Rivers Harvey, London Hospital; Edward Pierce Llewellyn Hughes and Stanley Larmond Randolph, Guy's Hospital; and Lennox Macdonald Stewart, University College, London.

SECOND EXAMINATION.

Anatomy, Physiology, and Materia Medica.—Second-class Honours: Charlotte Purnell and Elizabeth Patteson, London School of Medicine for Women; and Gertrude Ethel O'Brien, College of Medicine, Newcastle-upon-Tyne. *Pass List:* Helen Young Campbell, London School of Medicine for Women; Herbert Ridley Crisp, Gilbert Iliffe Cumberlege, Ronald Martyn Davies, Lionel Knipe Edmeades, Helen Mary Gurney, Elizabeth Niel Havelock, and David Ewart Johnstone, College of Medicine, Newcastle-upon-Tyne; Thomas Davidson Miller, M.R.C.S., L.R.C.P., St. Thomas's Hospital; Hubert Shield, College of Medicine, Newcastle-upon-Tyne; Herbert James Slade, M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; and Edward Davison Smith and John Franklin Young, College of Medicine, Newcastle-upon-Tyne.

THIRD EXAMINATION.

Orrock Arnott, College of Medicine, Newcastle-upon-Tyne; Thomas Henry Bishop, M.R.C.S., L.R.C.P., Edinburgh University and College of Medicine, Newcastle-upon-Tyne; Sydney Havelock, B.Sc., College of Medicine, Newcastle-upon-Tyne; Thomas Davidson Miller, M.R.C.S., L.R.C.P., St. Thomas's Hospital; Hector Graham Gordon Mackenzie, M.A., College of Medicine, Newcastle-upon-Tyne; Bertha Mary Mules, London School of Medicine for Women; Jessie Jean Martin Morton, Edinburgh School of Medicine for Women; Roland Wilfred Pearson, M.R.C.S., L.R.C.P., London Hospital; Howard Bewlay Stephenson, College of Medicine, Newcastle-upon-Tyne; Herbert James Slade, M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; Arthur John Turner, London Hospital; Herbert Hoyle Whaite, Birmingham University; and James Burrell Williamson and Cuthbert Rex Wilkins, College of Medicine, Newcastle-upon-Tyne.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the April meetings of the examiners held in Glasgow the following candidates passed the respective examinations :—

First Examination (Five Years' Course).—Robert Anderson, Beith; James Denis Collins, Castle Townsend; Robert M. Danks, Coatbridge; Narayan K. Desai, Bombay; Albert R. H. Harrison, Castletown Berehaven, co. Cork; John Alexander Irwin, Manor Ham; Ambrose Macaulay, Belfast; Narmadashanker S. Vaid, India; Barrington Harcourt Willoughby, Killevock, co. Tyrone.

Second Examination (Five Years' Course).—John Austin Joseph Crowley, Cork; James M'Turk, Wales; Harald Ainscough Higginson, Bolton; Harold Hilton Bradley, Manchester; James Jefferies, Cork; Thomas Richard M'Kenna, Brisbane; George Coats, Paisley; James Logan, Glasgow; Peter John M'Ardle, Wellington, New Zealand; Thomas Urmiston Wilson, Glasgow; James Henderson Milne, Glasgow; Henry Gilbert Higgins, Sunderland; Maurice Fitzgerald Anderson, Scotland; William Francis Gordon Scott, Bombay; Owen T. Jones, Bangor; John D. Jones, Tanygrisiau, Wales; and Walter E. Barrett, Leeds.

Second Examination (Four Years' Course).—Jesudasan S. Lamech, Tuinevelly; and John Hamilton Fullarton, Buteshire.

Third Examination.—John Robert Dunn Haltby, Belfast (with distinction); George Hart, Glasgow; William Frederick F. Durr, South Africa; Ronald Wingrave Duncan, Edinburgh; Charles Harold Bannerman, Lytham; Frederic James Breakell, Preston; Norman Bennington Watch, Portsmouth; Joseph Hume Patterson, North Berwick; William Wilton Johns, Carmarthen; James Alfred Ashurst, Bedford Leigh (with distinction); Andrew Ford Garrand, Glasgow; Gavin Watson Hill, Lesmahagow; Arnold M'Millan, Belfast; John Theodore Anderson, Victoria; and William Turner Carter, Naas.

Final Examination and admitted Licentiates of the three Coöperating Authorities.—Percival Henderson, Southport; Sites Chunder Chuckerbutty, Edinburgh; Ernest Gaunt, Ilkley, Yorkshire; Paul Alexander M'Donald, Glasgow; Charles Harold Bannerman, Southport; Alexander Jack, Belfast; William Watkin Neilson Knox, Glasgow; William Millar Ramsay, Fauldhouse; Thomas Percy Cox, Norwich; William Hawkley Woodger, Newcastle-upon-Tyne; Jnanendra Nath Datta, Glasgow; Sydney Malcolm Dickson, Liverpool; John Wylie, Glasgow; and Rudolf Baronov, Glasgow. One candidate also passed in Medicine, five in Surgery, seven in Midwifery, and eight in Medical Jurisprudence.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following candidates having passed the necessary examination have been admitted Fellows of the College :—

S. S. Pringle, M.B., B.Ch., University of Dublin, Surgeon to Mercer's Hospital, and W. I. de Courcy Wheeler, M.D., B.Ch., University of Dublin, Surgeon to Mercer's Hospital.

MEDICAL MAGISTRATE.—Mr. George Jackson, F.R.C.S., honorary surgeon to the Plymouth Public Dispensary and to the Devon and Cornwall Ear and Throat Hospital and one of the Direct Representatives of the profession on the General Medical Council, has been placed upon the commission of the peace for the borough of Plymouth.

OLD CLOTHES AND CHOLERA: RUSSIAN PRECAUTIONS.—In view of the anticipated cholera epidemic in St. Petersburg dealers in second-hand clothes will be obliged to hand over their merchandise to the city disinfecting rooms and the report is added that on the first appearance of cholera trade in so-called "old clothes" will be suppressed until the complete disappearance of the epidemic.

LIÉGE EXHIBITION.—The Universal Exhibition to be held at Liége this year bids fair to be one of considerable interest and on and after May 1st the service by the Harwich route between London and Liége will be greatly accelerated. Passengers leaving Liverpool-street Station at 8.40 P.M. will be due at Liége at noon the following day, while dining and breakfast cars will be attached to the boat trains between Liverpool-street Station and Parkeston Quay, Harwich, so that passengers may sleep and breakfast on the steamer before landing at Antwerp. Through carriages will run from alongside the steamer to Liége and *vice-versâ*, but none of our readers will be well advised in their anxiety to make a through journey to miss the opportunity of seeing Antwerp and Brussels.

RUSSIAN MEDICAL EXAMINATIONS: SCARCITY OF CANDIDATES.—The medical examination committee of the University of Moscow began its work in the second week of April in Moscow. There were only two candidates for examination, the one a lady doctor who had obtained her education abroad and the other a male doctor from a foreign university. The examination of these two people, says the *Novoe Vremya*, costs the University £200 and the two candidates contribute only £2 in the form of fees.

THE MEDICAL GOLF TOURNAMENT.—The medical golf tournament for 1905 will be held on Thursday, May 25th, at Sunningdale by the kind permission of the Sunningdale Golf Club whose links adjoin the station. The regulations for the competition are as follows: 18 holes match play *v.* Bogey. Class I., handicaps of 12 and under. Class II., handicaps of more than 12 (24 limit). Members of Sunningdale Golf Club deduct 2 from their handicap. No match may start later than 3 P.M. and no previous play will be allowed on the day of the tournament. There will be three prizes in each class: first and second prize, and prize for best last 9 holes *v.* Bogey, and there will be a foursome sweepstake competition *v.* Bogey in the afternoon. Players are left to arrange their own matches or can apply to the

honorary secretary of the tournament, stating the time that they wish to play. A green fee must be paid on the day to the steward at Sunningdale. Entries, stating lowest handicap and inclosing 5s. entry fee, to be made on or before Wednesday, May 24th, to the honorary secretary, Mr. Rolf Creasy, Windlesham, Surrey.

LUNACY INQUIRY.—An inquiry was held at Lancaster recently by Mr. T. H. Fischer, K.C., Master in Lunacy, assisted by a special jury of 23, the point at issue being the ability or otherwise of a lady of means to manage her affairs. It was alleged that the respondent suffered from the delusion, amongst others, that certain people were her relatives and that in consequence these persons had an undue influence over her actions. Mr. G. W. Mould, formerly medical superintendent of the Cheadle Asylum, said that from his interview with the respondent he was convinced that she did not understand the nature of the property she possessed nor how it was invested and was of unsound mind and unable to manage her affairs or herself. He gave particulars of several delusions relating to her imaginary relatives, from which it appeared that she believed that when five years old she was married to three husbands and had had children by them. She had also stated that her father married the Queen of Morocco and she had other delusions which the witness described as "fixed and persistent but varying in intensity." Dr. D. M. Cassidy, medical superintendent of the County Asylum at Lancaster, agreed with the conclusions of Mr. Mould. He had gone through several account books with the respondent and found that she could not balance them. She repeated the story of the three supposed husbands to him, adding that she believed the first to have been the Amir of Afghanistan. For the respondent Dr. E. S. Reynolds, visiting physician to the Manchester Workhouse Infirmary, alleged that though the lady undoubtedly had delusions she gave reasonable answers to his questions about money. So far as he was able to see they had no effect upon her conduct save the frequent gifts to the supposed relatives. The jury found that the lady was incapable of managing her affairs but capable of managing herself.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

London County Council and the Insane.

SIR JOHN BATTY TUKE has the support of Mr. JOHN BURNS and Mr. BENN in bringing in his Bill to authorise the London County Council to provide receiving houses for the reception of persons mentally afflicted or alleged to be of unsound mind and to authorise the detention of such persons in these houses.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 19TH.

Nursing in Ireland.

Dr. E. C. THOMPSON asked the Chief Secretary for Ireland whether he was aware that, by the arrangements enforced by the Local Government Board for Ireland in its nursing circulars, the Irish county hospitals were not recognised as training schools and nurses trained in these institutions were debarred from occupying the position of charge nurses for district hospitals; and whether, in view of the experience of leading physicians and surgeons in this matter and of the fact that nurses so trained were recognised as trained nurses in Great Britain and by the English Local Government Board, he would take steps to abrogate the rule in Ireland.—Mr. LONG answered: Many of the Irish county hospitals are recognised as training schools for nurses and the Local Government Board regards as "qualified nurses" persons who have obtained certificates of proficiency from these institutions. In order to encourage the appointment of at least one qualified nurse in each Irish workhouse it is provided by Section 58 of the Local Government Act of 1898 that one-half of the salary of such nurse shall be recouped from the local taxation account; and to insure that none but nurses of high qualifications should obtain these appointments the Board only recognises the certificates of general, clinical, or other hospitals where there are a good teaching staff and a large number of beds available for instruction. The present arrangement has been found to work satisfactorily and has received the approval of the medical profession generally.

Dr. THOMPSON further asked the Chief Secretary for Ireland whether he would lay upon the table of the House the report of the medical inspector of the Local Government Board as to the capabilities of the Tyrone county hospitals for training nurses.—Mr. LONG said: Such reports are confidential documents intended for the information of the Board and it would be contrary to the invariable practice to make them public.

Infantile Mortality.

Dr. THOMPSON asked the President of the Local Government Board whether he was aware of the percentage of deaths of infants; whether he received tabulated records of the deaths in different urban and rural districts; and whether in future he would direct a medical inspector to visit such localities and inquire into the causes producing such results.—Mr. GERALD BALFOUR replied: The Local Government Board is aware of the percentage of deaths of infants in different parts of England and Wales. Its information on this subject is derived from particulars given in the weekly and quarterly reports of the Registrar-General as to certain towns and from the annual reports of medical officers of health of urban and rural districts, copies of which are sent to the Board. I could not undertake to direct a medical inspector to visit every locality in which there is a high rate of infantile mortality, but where this is the case the circumstance is taken into account with other considerations in determining whether there should be a medical inspection of the district.

Irish Schedule of Infectious Diseases.

Dr. THOMPSON asked the Chief Secretary of Ireland why the Local Government Board for Ireland had omitted measles from the schedule of infectious diseases in view of the character of this disease.—Mr. LONG replied: The infectious diseases to which the Infectious Disease (Notification) Act, 1889, applies are specified in Section 6 of the Act and do not include measles. Power is, however, given to the sanitary authority by Section 7 to order, subject to the Board's approval, that the Act shall apply in its district, permanently or temporarily, to measles or any other infectious disease not mentioned in the Act.

BOOKS, ETC., RECEIVED.

OFFICE OF THE SUPERINTENDENT OF GOVERNMENT PRINTING, Calcutta.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India:—
Oriental or Delhi Sore. By Captain S. P. James, M.B., I.M.S. New Series. No. 13. Price Annas 10, or 1s.
On a Parasite Found in the White Corpuscles of the Blood of Dogs. By Captain S. P. James, M.B., I.M.S. New Series. No. 14. Price Annas 10, or 1s.

PROTAT FRÈRES, Macon.

Traitement des Maladies du Cœur, de la Goutte et du Rhumatism, à Bourbon-Lancy. Par le Docteur A. Piatot Ancien Interne des Hôpitaux de Paris, Médecin Consultant à Bourbo-Lancy, Médaille d'Argent de l'Académie de Médecine. Price not stated.

WARD LOCK AND CO., LIMITED, Warwick House, Salisbury-square, E.C.

A Pictorial and Descriptive Guide to London and its Environs Twenty-sixth edition, entirely re-written and re-illustrated. One hundred and twenty-seventh thousand. With Map of London and Twelve Miles Round and twenty other maps and plans. Price 1s.

WILEY, JOHN, AND SONS, New York. (CHAPMAN AND HALL, Limited, London.)

Manual of Psychiatry. By J. Rogues de Fursac, M.D., formerly Chief of Clinic at the Medical Faculty of Paris. Authorised translation from the French. By A. J. Rosanoff, M.D., Junior Assistant Physician, L.I. State Hospital, King's Park, N.Y. Edited by Joseph Collins, M.D., Professor of Diseases of the Mind and Nervous System in the New York Post-Graduate Medical School. First edition. First thousand. Price, cloth, 10s. 6d. net.

WRIGHT, JOHN, AND CO., Bristol.

"First Aid" to the Injured and Sick. An Advanced Ambulance Handbook. By F. J. Warwick, B.A., M.B. Cantab., M.R.C.S., L.S.A., Associate of King's College, London; Captain, Royal Army Medical Corps (Vol's.) London Companies; and A. C. Tunstall, M.D., F.R.C.S. Edin., Captain commanding the Fourth or City of London Volunteer Infantry Brigade Bearer Company. Third and revised edition. Price 1s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

AMBROSE, J. M., L.R.C.P. & S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Ardagh District of the county of Limerick.

BARFORD, A. M., M.D. Brux., D.P.H. R.C.P.S. Edin., L.R.C.P. Lond., M.R.C.S., has been appointed Physician to the Chichester General Infirmary.

BOND, FRANCIS THOMAS, M.D. Lond., M.R.C.S., F.R.S. Edin., has been appointed Medical Officer of Health for the Tetbury Urban District Council.

CHATTERTON, EDGAR, M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Pathologist to the Western Ophthalmic Hospital, Marylebone-road, W.

HARNETT, CHARLES JOHN, M.D. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Visiting Surgeon to the Royal Sea Bathing Hospital, Margate.

HEWKLEY, FRANK, M.B. Durh., has been appointed Physician to the St. Luke's Medical Mission.

MACCARTHY, W., M.B., B.Ch., B.A.O. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Abbeyfeale District of the county of Limerick.

TAYLOR MARK RONALD, L.R.C.P. Lond., M.R.C.S., has been appointed Admiralty Surgeon and Agent at Porthleven and Gunwalloe, Cornwall.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Senior and Junior Resident Medical Officers for six months. Honorarium at rate of £20 and £10 per annum respectively, with board and lodging.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Physician, unmarried. Salary £90 a year, with board and lodging. Also Second Honorary Physician.

CHARTHAM, NEAR CANTERBURY, KENT COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140, with board, quarters, attendance, and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Assistant House Surgeon. Salary £60 per annum, with rooms, board, washing, and attendance.

GRIMSBY AND DISTRICT HOSPITAL.—Resident House Surgeon. Salary according to qualifications; lodging and washing provided.

HASTINGS, FAIRLIGHT HALL CONVALESCENT HOME.—Visiting Physician (honorary).

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon for six months. Honorarium 10 guineas, with residence, board, and washing.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Assistant Medical Officer and Pathologist. Salary £175 per annum, with board, lodging, washing, and attendance.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £20, with board and residence.

HULL, ROYAL INFIRMARY.—House Physician, unmarried. Salary 100 guineas per annum, with board and apartments.

LIVERPOOL INFIRMARY FOR CHILDREN.—House Surgeon. Salary £100 per annum, with board and lodging.

MARGARET-STREET HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Cavendish-square, W.—Physician (honorary).

MICKLEOVER, DERBY COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £120, rising to £150 per annum, with apartments, board, washing, and attendance.

MILLER HOSPITAL AND ROYAL KENT DISPENSARY, Greenwich-road, S.E.—Junior Resident Medical Officer for six months. Salary £80 per annum, with board, attendance, and washing.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood, Middlesex.—Resident Medical Officer at Northwood. Honorarium £80, with board and residence. Also Senior and Junior Resident Medical Officers at Hampstead. Honorariums: Senior Officer, £100 per annum; Junior Officer, £50 per annum.

NEWCASTLE-UPON-TYNE DISPENSARY.—Resident Medical Officer. Salary £250, rising to £275, with residence.

NEWCASTLE-UPON-TYNE, UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Demonstrator of Bacteriology.

NORFOLK AND NORWICH HOSPITAL.—House Physician, unmarried. Salary £80 a year, with board, lodging, and washing.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Pathologist and Bacteriologist. Salary £75 per annum with lunch.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician. Salary £100, with board, lodging, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer for three months. Salary at rate of £60 per annum, with board, residence, and washing.

ROYAL EAR HOSPITAL, Dean-street, Soho, W.—Ophthalmic Surgeon.

SOCIETY OF APOTHECARIES OF LONDON.—Examiner in Surgery.

THROAT HOSPITAL, Golden-square, W.—Senior Clinical Assistants.

WALSALL AND DISTRICT HOSPITAL, Walsall.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Bridport in the county of Dorset, and at Sedbergh in the county of York.

Births, Marriages, and Deaths.

BIRTHS.

BRIDGEFORD.—On March 21st, at Boulder, West Australia, the wife of W. Bridgeford, M.R.C.S. Eng., of a son.

JEWELL.—On April 22nd, at Oakmead, Balham Marion, the wife of J. W. F Jewell, M.D., M.S. Lond., of a daughter (Marjorie Susie).

NEWBY.—On April 18th, at Addiscombe-road, Croydon, the wife of Gervase E. Newby, F.R.C.S., of a son.

NICHOLSON.—On April 24th, at 20, Manor-place, Edinburgh, the wife of H. Oliphant Nicholson, M.D., F.R.C.P. Edin., of a daughter.

WOOD.—On April 24th, at Beaconsfield-villas, Brighton, the wife of Walter R. Wood, L.R.C.P., M.R.C.S., L.D.S., of a son.

MARRIAGE.

CORMACK—CAMERON.—On April 25th, at St. John's Parish Church, Edinburgh, William Petrie Cormack, M.B., Ch.B. Edin., Wick, to Violet, only surviving daughter of J. Macdonald Cameron, Esq., late M.P. for the Northern Burghs.

DEATHS

RICHARDS.—On the 19th inst., at 38, Arundel-square, Barnsbury, N., Caleb Carey Richards M.D., M.R.C.S., aged 68 years.

SIBBALD.—On April 20th, at Great King-street, Edinburgh, Sir John Sibbald, M.D. F.R.C.P.E., late Commissioner in Lunacy for Scotland, aged 72 years.

STOTT.—On the 26th inst., at Desnagrove, Haslingden, William John Stott, M.D., M.R.C.P. Interment, Monday next at Haslingden Parish Church.

Notes, Short Comments, and Answers to Correspondents.

DAMMING OF THE THAMES.

To the Editors of THE LANCET.

SIRS,—The objections which are now coming to light after many months of discussion are assuming a form bordering on the ridiculous. Does your correspondent Dr. Stanley Haynes seriously believe that the vertical displacement of the air above the river by the rising tide is of the slightest hygienic value or is he joking? The rise of the tide will—in six hours—displace its own bulk of air, of course, but a very slight breeze will displace in five minutes more air than the tide can move in five days, and when the tide is down we get the intolerable stench of the mudbanks for several hours to poison the air and the rising tide lifts this foul air to pour out over the riparian districts.

There are no "low banks on the Surrey side" to be overflowed. Perhaps he refers to low-lying lands. If so, these will be pumped drier than they ever are now and so improve the health conditions. Then he says that none of the water-supply of London should be drawn from the Thames. But two-thirds of the water-supply is now so obtained and it is one of the best and purest services in England. Perhaps, however, he means that the supply should not be taken from the river below Teddington. It will not be necessary to do so as the returns show that there is sufficient—at least for 50 years—above Teddington, but the appended letter from a great Thames chemist of 40 years' standing ought to satisfy any scruples on this question of the condition of the river.

I am, Sirs, yours faithfully,

T. W. BARBER.

Tothill-street, Westminster, S.W., April 18th, 1905.

*** Mr. T. W. Barber's words must carry great weight. The opinion of the chemist in the appended letter appears to be that the scheme of converting the river above Gravesend into a fresh-water lake "would effect an enormous improvement in every way." Upon this opinion, however, he places the important reservation that he is not quite clear "that the present method of obtaining and discharging the effluent from the works at Barking-creek and Crossness would under the new circumstances be the best."—ED. L.

CAISSON DISEASE.

IN its engineering supplement the *Times* of April 19th mentions that the Dutch Government is understood to be contemplating legislation in connexion with the risks of those working in compressed air. The same journal was recently informed from Newcastle that a workman had brought an unsuccessful action against the Cleveland Bridge Company, Limited, claiming damages for illness attributed to the compressed air in a caisson chamber in which he had been employed. Good results are said to have been obtained in the treatment of caisson disease by a temporary course of air under considerable pressure, the gradual reduction of which invariably restores the patient to the full possession of his normal faculties.

DIFFICULTIES UNDER THE INFECTIOUS DISEASES NOTIFICATION ACT.

To the Editors of THE LANCET.

SIRS,—Would you kindly state what you think is the generally accepted ethics in the following circumstances?

I am acting as a "locum tenens" here and in the ordinary course of business saw in my consulting-room a man who is a clerk at a railway station and who had been sent out of the office by the superintendent because the other clerks said that he had small-pox and refused to work with him. After carefully examining the patient I came to the conclusion that it was a case of chicken-pox. The rash was very like small-pox but with the face scarcely touched. However, after he got home the people in the house were scared and I was sent for. Meeting another professional man I took him with me. He said that he should notify it as small-pox. However, I felt sure of my diagnosis; but on the advice of my *confrère*, and as I was only a "locum" and did not want to run the slightest risk of injuring the gentleman I was acting for, I compromised and sent a polite note to the medical officer of health narrating the circumstances and asking him if he would kindly see the case and state his opinion. To this I received, much to my astonishment, a reply refusing to see the case, and informing me that it was no part of his duty to make diagnoses for general practitioners, that if I thought it was small-pox I must notify it, and if *I* could not diagnose it I had better call in a practitioner who could.

I am, Sirs, yours faithfully,

Bromley-by-Bow, April 21st, 1905. THOMAS MARSHALL.

*** We only express our opinion upon the facts as given to us by our correspondent. If, as our correspondent suggests, being in a position of difficulty he appealed to the medical officer of health for assistance and received the curt reply that he has quoted we have no hesitation in saying that the medical officer of health was wrong—ethically wrong in his attitude towards a medical colleague, and practically wrong as his action did not conduce to satisfactory public business.

It is an unfortunate fact that under the Infectious Diseases (Notification) Act difficulties may arise between the medical officer of health and the private practitioner owing to a certain position of superintendence which the medical officer of health possesses in the matter of infectious disease. We have always in THE LANCET urged upon both the medical officer of health and the private practitioner to work hand-in-hand for the good of the public. Such an attitude as that said to have been taken up by the medical officer of health in the above statement is, in our opinion, the exact converse to what is desirable.—ED. L.

A QUESTION OF ETHICS.

To the Editors of THE LANCET.

SIRS,—Will you be so kind as to give me your advice in the following case:—A calls B into consultation over case C. B recommends a certain line of treatment, A falls ill, and C having no confidence in A's assistant asks B to attend him. B agrees to do so on the distinct understanding that if A recovers before C, he (B) will hand the case over to A. A recovers and B writes to him placing the matter in his (A's) hands, stating at the same time that C is almost recovered. A replies that in the circumstances B had better finish the case. At the termination of the case C expresses himself extremely pleased with B's skill and states that in the future he will call in B should he or his family require any attendance. B says that he cannot agree to that as he owes his introduction to them through being called in by A as a consultant. C and his family express in strong terms their right to call in any medical man they wish.

Is B justified in attending C or his family in the future?

I am, Sirs, yours faithfully,

April 16th, 1905. ETHICS.

*** The situation is a most unfortunate one, because it inevitably brings the practice of inviting a fellow practitioner to a consultation into disrepute, and this practice is a very valuable one for the public. But members of the public have the right to choose their own medical man and, therefore, B is justified in attending C and C's family. B has conformed to ethics by refusing to do so previously, but if C will take no denial there is no other way out of the dilemma. —ED. L.

MILEAGE OF THE LANCET.

A CURIOUS correspondent informs us that he estimates that in THE LANCET for 1904 there were about 600,000 lines, or 6,000,000 words, or about 30 miles of type, in the body of the paper, excluding advertisements. He thinks perhaps the Editors do not know the mileage over which their eyes have to travel in the course of a year. We certainly did not and are interested to know and as our readers may be interested to know also we insert this note.

MANNERS IN THE LONDON STREETS.

To the Editors of THE LANCET.

SIRS,—With reference to your recent annotation on this subject it is clear that however careful is the attempt to protect young girls from degrading influences the task is hopeless as long as men allow their unbridled tongues to utter the coarse language which pollutes much of the intercourse of the day. But it must be remembered that the modern craving for excitement is responsible for much of the deterioration which the female mind must suffer from contact with the highly emotional situations in which they are placed. Attendance at race meetings can never be unaccompanied by any but the very worst influences, while the language that may be there heard is worse than usually prevails in the streets. Just as the wine-bibbing proclivities of our ancestors have reacted to a considerable extent in the growth of moderation to-day, so it is possible that the fashion and the craze for excitement and self-enjoyment which so blatantly obtrude themselves in selfish prodigality will also react on the succeeding generation which, seeing and suffering from the folly of its forebears, recognises that its well-being and its happiness lie in the direction of an ordered self-restraint.

I am, Sirs, yours faithfully,

April 24th, 1905. M.D.

A CONDITIONAL BEQUEST.

Mr. Robert Wallace MURRAY, J.P., of Ennikeen, Newcastle, co. Down, who died on Christmas Eve, 1904, and whose will has just been proved in the district registry of Belfast, left, amongst other legacies, £1000 to the Hospital for Sick Children, Queen-street, Belfast, and £1000 to the Society in Belfast for Providing Nurses for the Sick Poor. As to the residue of his estate, which is expected to be large, the testator directed that it should be held by his trustees upon trust to divide the same into two equal shares, one to be paid to the London Missionary Society, whilst as to the other his trustees should "as soon as possible intimate to the governors of the Forster Green Consumptive Hospital, Belfast, what the said half consists of and how it is then invested, and what the trustees estimate the net annual minimum income thereof will be, and if the said governors should within 12 months from the date of receiving such intimation satisfy the trustees that they can from outside sources provide proper accommodation in addition to their then accommodation for as many patients as such net annual minimum income will support, allowing £1 per week for each patient, then the said trustees shall be at liberty to agree with the said governors that on such additional accommodation being provided within two years from that date they will settle a scheme under which the entire income of such share and any accumulations thereof shall be applied in the maintenance in the said hospital of consumptive patients who are unable themselves to pay any portion of the cost of their maintenance and treatment." In the event of the failure of the governors of the hospital to comply with the foregoing conditions the testator empowers his trustees to apply the income "for the maintenance and treatment, in hospitals, of consumptive patients in such manner and form and subject to such rules and conditions as the said trustees may from time to time determine."

A CORRECTION.

To the Editors of THE LANCET.

SIRS,—In your issue of April 8th, p. 929, col. 2, line 30, "the uræmia being more marked" should read "the anæmia being more marked."

I am, Sirs, yours faithfully,

Blackburn, April 19th, 1905. J. W. MILLER.

Londoner.—Such a notice can be sent by either the transferer or the transferee, but care must be taken that it is sent only to patients whose names appear upon the transferer's books.

B.O. Advocate.—We do not think that a plea in our columns for such a purpose would lead to any practical result.

Jus.—We have frequently published similar instances and have recommended the course that has been adopted.

R. G.—The other medical man should be informed of all the circumstances.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (1st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (3rd).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (4th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.).

FRIDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Royal Ear (10 A.M.).

SATURDAY (6th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY (2nd).—PATHOLOGICAL SOCIETY OF LONDON (Middlesex Hospital).—5 P.M. Dr. V. Bonney: Nuclear Division in New Formations.—Mr. A. G. R. Foulerton: (1) Squamous-celled Carcinoma associated with Exposure to X Rays; (2) New Species of Streptothrix isolated from the Air; (3) Further Contribution to the Pathology of Streptothrix Infections.—Dr. W. S. Lazarus-Barlow: Self-regulating Warm Stage.—Mr. C. R. Lyster: Electrical Warm Stage.—Some Points in the Contraction of Œsophageal Muscle.

WEDNESDAY (3rd).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. V. Bonney, Mr. Foulerton, and others. Short Communication:—Dr. C. E. Purslow: Repeated Tubal Pregnancy; Abdominal Section on each occasion. Paper:—Dr. Boxall: Mortality in Childbed both in Hospital and General Practice.

HUNTERIAN SOCIETY (London Institution, Finsbury-circus, E.C.).—6.30 P.M. Annual Meeting. 7 P.M. Annual Oration:—Dr. R. Humphreys: Excretion with special reference to Vicarious Excretion in Bright's Disease.

THURSDAY (4th).—OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8 P.M. Card Specimens will be shown by Mr. J. J. Evans, Mr. G. W. Thompson, Mr. C. H. Walker, Mr. L. Paton, and Mr. W. I. Hancock. 8.30 P.M. Papers:—Dr. L. Buchanan: (1) Choroiditis; (2) Results of Birth Injury to the Cornea.—Dr. A. J. Ballantyne: Anterior Synechia of the Papillary Membrane.—Mr. S. J. Taylor: Notes on a Case of Pulsating Exophthalmos cured by Ligature of the Common Carotid.

NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M. Papers:—Dr. J. W. Hunt: Personal Errors in Diagnosis and Treatment.—Dr. F. Treslian: Certain Points in Diagnosis.

FRIDAY (5th).—WEST KENT MEDICO-CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.). 8.45 P.M. Address:—The President: Corns and Bunions.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, W.).—5.30 P.M. Clinical Cases will be shown by Mr. S. Stephenson, Dr. F. J. Poynton, Mr. G. Pernet, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (1st).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. R. G. Little: Clinique. (Skin.) 5.15 P.M. Prof. W. Cheyne: Tubercular Diseases of Joints, their Diagnosis and Treatment.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2.30 P.M. Dr. S. Taylor: Surface Anatomy. 4 P.M. Mr. Dunn: Practical Ophthalmology.

TUESDAY (2nd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. H. Campbell: Clinique. (Medical.) 5.15 P.M. Dr. L. Smith: Some Clinical Aspects of Nephritis.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—11 A.M. Dr. Candler: Bacteriology.

WEDNESDAY (3rd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. H. L. Barnard: Clinique. (Surgical.) 5.15 P.M. Mr. J. Pardoe: Cystoscopy and Urethroscopy.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3 P.M. Mr. Bidwell: Intestinal Anastomoses.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration: Mr. Nourse: Nasal and Aural Accessory Sinuses.

THURSDAY (4th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique: (Surgical.) 5.15 P.M. Dr. C. R. B. Keetley: Diseases and Dislocations of the Hip-Joint.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—11 A.M. Dr. Candler: Bacteriology. 3.15 P.M. Mr. Bidwell: Intestinal Anastomoses. 4.30 P.M. Dr. S. Taylor: Surface Anatomy.

CHARING CROSS HOSPITAL.—4 P.M. Dr. Mott: Demonstration of Medical Cases. (Post-Graduate Course.)

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—3 P.M. Lecture:—Mr. Doran: Cystic Dilatation of Gall-bladder simulating Renal or Ovarian Cyst.

FRIDAY (5th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. H. Tilley: Clinique. (Throat.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.). 2 P.M. Mr. Candler: Examination of Blood and Urine. 5 P.M. Mr. Bidwell: Intestinal Anastomoses.

SATURDAY (6th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10.30 A.M. Dr. S. Taylor: Surface Anatomy.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

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Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 27th, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
April 21	29·90	N.	0·02	83	50	41	41	43	Cloudy
,, 22	30·11	N.	0·01	56	50	40	39	43	Cloudy
,, 23	30·01	W.	...	97	54	39	42	46	Cloudy
,, 24	29·90	N.W.	0·01	106	52	38	41	45	Cloudy
,, 25	30·00	S.W.	..	97	54	41	44	49	Cloudy
,, 26	29·97	N.W.	0·04	86	60	49	50	51	Cloudy
,, 27	29·94	S.W.	0·03	83	57	50	52	54	Cloudy

During the week marked copies of the following newspapers have been received:—*Freeman's Journal, Windsor and Eton Express, Liverpool Courier, Morning Leader, Leeds and Yorkshire Mercury, Yorkshire Post, Hertfordshire Mercury, Reading Mercury, Oxford Gazette, Edinburgh Evening Dispatch, Glasgow Herald, Surrey Advertiser, Manchester Evening News, Westminster Gazette, Mining Journal, Local Government Chronicle, Daily News, Liverpool Post and Mercury, Daily Chronicle, Standard, Literary Digest,* &c.

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